Minor Source Permit Application
Clark County Department of Environment & Sustainability—Division of Air Quality

For DAQ Use Only

Invoice Number: 066074

Submit Application and Payment to:
Division of Air Quality
4701 W. Russell Road, Suite 200
Las Vegas NV 89118

RECEIVED CC DAQ
2024 JAN 23 PM3:22

Section A: Application Type (select one):

- ☒ New Permit
- ☐ Permit renewal*
- ☐ Renewal with revision*
- ☐ Significant Permit Revision*
- ☐ Minor Permit Revision*
- ☐ Permit exemption re-evaluation*

*Include the Source ID number in the Source Identification section below.

Application Description: Please describe what is being proposed in this application. Include details that describe revisions to your permit (e.g., adding, removing, or changing equipment; changing permit conditions; changing operational throughputs; requesting a voluntary emission limit; etc.). If this application is for a new stationary source, write "New source" in the space provided below. If this application is for a renewal permit with no revisions, write "Renewal – no changes" in the space provided below.

New Source.

Verizon is proposing to build a new Mobile Switching Center consist of three diesel-fired emergency generators. With this application, Verizon is proposing to construct and operate one Cummins generator rated at 500 killowatt electircal (kWe) and two Cummins generators each rated at 3,000 kWe. Each generator has a diesel fuel storage tank that is considered insignificant activity per County Air Regulation 12.1.2(c)(9).

The facility-wide PTE of nitrogen oxides, the pollutant of concern for diesel-fired engines, is less than 57 tons per year, calculated based on 500 hours of operation per generator per year at 100% load. Therefore, this facility is a true minor source with respect to Title V major source.

Complete the fields in Sections B–D even if there is no change from the previous application.

Section B: Source Identification

EXISTING PERMIT HOLDERS ONLY: Has any of this information changed since the previous application? ☐ YES ☐ NO

Source Name: Verizon Las Vegas Belmont	Source ID No.:
Permit Expiration Date (existing permits only):	Portable Source: ☐ Yes ☒ No

Physical Location Information
(For portable sources, provide physical address of main office)

Number:	Direction:	Street Name:	Street Type:	Suite:	P.O. Box:
2650		Belmont	St		
City: North Las Vegas			State: NV	Zip: 89030	

Phone Numbers

Office: n/a	Fax: n/a

North American Industry Classification System (NAICS) Designation

Primary NAICS: 48129901	Additional NAICS (optional):

Source Description: Please describe the nature of your business, including processes and products.

The facility will be a Mobile Switching Center that is a primary hub for cellular traffic on the Verizon Networks. The proposed emergency generators will be used to provide emergency power to critical communication equipment in the event of commercial power interruption.

Section C: Company Information (AS LISTED ON THE SECRETARY OF STATE'S BUSINESS CERTIFICATE/FILING)

EXISTING PERMIT HOLDERS ONLY: Has any of this information changed since the previous application? ☐ YES ☐ NO
If company ownership and/or name has changed, separately submit a Transfer of Ownership / Change of Name form + fee (SS-PER-020-01).

Company Name: Verizon Wireless

Number:	Direction:	Street Name:	Street Type:	Suite:	P.O. Box:
2650		Belmont	St		

City: North Las Vegas | State: NV | Zip: 89030

Proof of Company Name: Have you selected "New Permit" for the action type above? ■ YES ☐ NO

If YES, attach a printout of your company's business listing on the Nevada Secretary of State website or some other formal documentation that includes your company's full legal name.

Phone Numbers

Office: n/a | Fax: n/a

Section D: Responsible Official (RO) Information

EXISTING PERMIT HOLDERS ONLY: Has any of this information changed since the previous application? ☐ YES ☐ NO
If the RO has changed, separately submit a Declaration of Responsible Official form (RO-PER-003).

Name: Ron Pena | Title: Senior Manager - Network Performance

Number:	Direction:	Street Name:	Street Type:	Suite:	P.O. Box:
126	W	Gemini	Drive		

City: Tempe | State: AZ | Zip: 85283

Email: ron.pena@verizonwireless.com | Primary Communication Method: ■ Email ☐ U.S. Postal

Office: | Extension: | Cell: 602-320-0010 | Fax:

Responsible Officials. The RO for a minor source in Clark County is the person who is authorized by the owner of the source to sign all documents and to make decisions that:

- Govern the operation of the regulated facility;
- Initiate and direct measures to assure compliance with air quality laws and regulations; and
- Ensure actions are taken to gather complete and accurate information for permit application requirements.

Section E: Plant Manager/Environmental Representative Information (Optional)

Name: Melanie J Lamb | Title: Enviromental, Health and Safety

Number:	Direction:	Street Name:	Street Type:	Suite:	P.O. Box:
700		Hidden Ridge			

City: Irving | State: TX | Zip: 75038

Email: melanie.lamb@verizon.com

Office: | Extension: | Cell: 214-846-1428 | Fax:

Section F: Environmental Consultant Information (Optional)

Name: Tiffany Cuni | Title: Partner

Email: Tiffany.Cuni@erm.com | Office: 513-830-9062 | Extension:

By identifying a consultant, the RO assents that such consultant has the authority to communicate directly with DAQ for the limited purpose of providing supplemental information and comments in support of the information already provided by the RO in the application. The RO acknowledges that any change to, or withdrawal of, the application must be done by the RO.

Section G: Billing Contact (Accounts Payable) Information (Optional)

Name: N/A | Title:

Email: | Office: | Extension:

Section H: Application Supplemental Documents

Required for all permit applications unless the information was submitted previously and no changes are being proposed in this application, with the following exceptions:

- Gasoline dispensing operations must always submit their GDO worksheets, even if no changes were made.
- Sources using VOC-containing material (paints, solvents, thinners, etc.) must always submit Safety Data Sheets (SDSs) for all proposed materials with new and renewal applications, even if there were no changes; attach SDSs for new/existing materials to revision applications that propose changes to the weighted average VOC content; and attach Environmental Data Sheets (EDSs) as applicable.

1. Supplemental Documents

Site Map. A map that depicts the physical location of the stationary source, which must identify the main entrance, property boundaries, and all buildings and structures on the site as they relate to the source emission units (EUs). The map should include any legal descriptions associated with the source property (Clark County Assessor parcel number(s) or Township, Range, and Section(s)).

Flow Diagram. A detailed flow diagram of each process that depicts all associated EUs. Each process must be labeled, and each EU must have a unique identification number that matches with a unit in the Emission Units List. EUs in existing permits should retain their EU numbers from that permit. A flow diagram is not needed for sources that do not move materials/products from one emission unit to the next (e.g., commercial buildings or gasoline stations). Standalone emission units do not have to be included in a flow diagram (e.g., emergency backup generators and nonindustrial boilers).

Emission Units, Insignificant Equipment/Activities, and Exemption List. A list of equipment or activities that emit one or more regulated air pollutants to the atmosphere. A complete list containing the following areas of information must be included in the application for all new EUs and other emitting equipment and activities.

- **Descriptions and Specifications**. Descriptive information about the types of EUs and insignificant equipment/activities. Include the manufacturer name, model & serial numbers, and Source Classification Codes (SCC) for all EUs.
- **Power/Capacity Ratings**. The design power or capacity output of all emitting equipment. Manufacturer's documentation must be included to support these specifications.
- **Dates of Manufacture/Installation/Operation**. The date an EU is fully constructed/assembled and made available for use; the date an EU is put into place and ready to operate; the date an EU commences normal operation. Dates can be actual or projected.
- **Emission Unit Number**. A unique identification number corresponding to each EU presented in the flow diagram (as applicable). The number is fictitious for a new EU (e.g., "New 01"), and as listed in the permit for an existing EU.
- **Exemptions**. EUs or activities claimed as exempt in accordance with Section 12.1.2(b) of the Air Quality Regulations (AQRs).

NOTE: The most recent worksheets are required for applications proposing new EUs. Available at Stationary Source Permitting Forms.

Air Pollution Control. Pollution control devices or measures that reduce the amount of regulated air pollutants emitted to the atmosphere. The following information must be included in an application for all new or modified EUs (as applicable).

- **Air Pollution Control Equipment List.** Identification and description of each control device that shall include design specifications (including capture and control efficiencies), manufacturer, model & serial number, and associated EUs and processes.
- **Air Pollution Control Measure List.** Description of each control measure that shall include how/where it is applied, how much control is applied, control efficiency, and associated EUs and processes.
- **RACT Demonstration Proposal**. Applications for a new minor source with a potential to emit (PTE) that is significant for any regulated air pollutant under AQR 12.1.1(j), OR for a modifying source with a PTE increase that is significant for any regulated air pollutant, shall propose a demonstration of Reasonably Available Control Technology (RACT) for the affected pollutant(s). The proposal shall describe the

methodology by which RACT was determined and how RACT compliance will be demonstrated, including material usage limits, performance testing, or emissions monitoring, if applicable.

NOTE: The most recent worksheet is required for applications proposing new air pollution control equipment.

Source Emissions. Estimates of each regulated air pollutant that will be emitted to the atmosphere. The following types of emissions must be included in **ALL** applications for **ALL** new or modified EUs and insignificant activities, as noted.

- **Emission Factor(s)**. The short-term rate at which regulated air pollutants can be emitted from an EU or insignificant activity, generally presented as an hourly rate (lb/hr) or a rate based on throughput of materials (lb/ton). The amount of pollutant contained within a product can also serve as an emission factor, typically presented as weight of pollutant per volume of product (lb/gal).

- **Status Determination Emissions (SDE).** The amount of regulated air pollutants that can theoretically be emitted by EUs and insignificant activities when there are no operational restrictions and no emission control devices/measures, unless these limiting factors are inherent to the operation based on operational necessity and/or regulatory requirements. Typically based on the maximum rated capacity of the equipment and an assumed 8,760 hours of operation per year (emergency generators and fire pumps are based on 500 hours per year), regardless of whether the equipment is expected to operate less. The emissions of each EU and insignificant activity should be submitted individually and as a source-wide total. The SDE and PTE together establish the source's status: true minor, synthetic minor, or major.

- **Potential to Emit.** Also referred to as "allowable emissions": the amount of regulated air pollutants EUs can emit after operational limitations and emission control devices/measures are applied. Does not include anything deemed to be insignificant or exempt from permitting. The emissions of each EU should be submitted individually and as a source-wide total. The PTE is listed in the permit, and serves as an emission limitation that must be met on either an annual or rolling 12-month basis.

- **Emissions Increase.** The difference in PTE before and after any proposed changes. For new sources, the emissions increase is the entire PTE. For modifying sources applying for a permit revision, the emissions increase is the difference between the proposed PTE and the current PTE (what is in the most recent permit). Emissions increases that meet or exceed any of the significant thresholds listed in AQR 12.1.1(j) trigger additional application requirements.

Operational Information. A list of production rates, fuel types (with consumption rates), raw materials (with throughput rates), and operating schedules, if not included in the required emission unit worksheets. Provide enough information to calculate hourly and annual emissions. List any inherent limitations on operations (not to include self-imposed limits) or work practice standards affecting emissions.

Safety Data Sheet (SDS). A detailed document prepared by the manufacturer or importer of a hazardous chemical that describes its physical and chemical properties. EDSs with similar information, including VOC and hazardous air pollutant content, may substitute for SDSs as applicable.

Compliance Monitoring Devices. Identification and description of each air pollution compliance monitoring device or activity, including design specifications, manufacturers, model & serial numbers, and all associated EUs and processes.

Stack Information List (if applicable). Emissions (exhaust) stack location, height above grade, diameter (inside or effective), exhaust gases, flow rate (in actual cubic feet per minute), and temperature (in degrees Fahrenheit).

Federal Performance Standards List. A list of the federal performance standards, emission limits, and requirements that apply to the source (i.e., NSPS, NESHAP, and MACT). If the source has an EPA- or DAQ-approved exemption for one or more performance standards, attach the exemption approval(s) to the application.

Applicable Requirement (AR) Supplement (if applicable). Requirements of federal, state, or local jurisdictions that are not included in AQR 12.1. These may be specified in a court order, Hearing Officer or Hearing Board order, consent decree, compliance plan, etc.

2. Other Supplemental Documents (attach as applicable)

Construction Schedule. A schedule outlining the timeline for constructing a new or modified source. Dates can be approximate. Not applicable to sources that have already been constructed or do not require construction.

Minor Permit Revision Specification. The information needed to demonstrate that the proposed permit revision complies with the minor revision criteria outlined in AQR 12.1.6(b). Not applicable to new sources or sources proposing a different type of permit revision.

Compliance Plan. A plan addressing a source's issues of noncompliance required when submitting an application for a significant revision or a permit renewal. Attach a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any requirement that the source is not meeting at the time of permit issuance.

Request for a Voluntarily Accepted Emission Limitation (VAEL). An emission limitation or other standard that a source voluntarily proposes and accepts in its permit to avoid being subject to an otherwise applicable requirement. If requesting a VAEL pursuant to AQR 12.1.7, include enough detail to demonstrate that the proposed limitation is enforceable as a practical matter, including, at a minimum, how the limitation affects each EU and each air pollutant emitted by that EU.

> **NOTE**: Subsequent permit revisions affecting a pre-established VAEL are classified as significant permit revisions. An initial VAEL intended to avoid (1) New Source Review under AQRs 12.2 or 12.3, (2) having to obtain a Part 70 Operating Permit, or (3) becoming a major source of hazardous air pollutants is subject to the public participation procedures set forth in AQR 12.1.5.3.

Applicable Requirement (AR) Exemptions List. A list of requested exemptions from otherwise applicable requirements. Include detailed justification to support each request for an exemption.

Section I: Application Advisories

Small Business Assistance. A DAQ program that offers free assistance on permitting and compliance matters to small businesses (100 employees or fewer). Please ask for an SBA representative at our front counter or call (702) 455-5942 to schedule an appointment.

Fees and Payments.

Air Quality Program Fees: AQR 18, "Permit and Technical Service Fees," describes all fees related to this application and the resulting permit. AIR QUALITY REGULATION 18

Application Filing Fee: The application fee invoice must be paid in full before the application will be processed.

Permit Issuance: All outstanding invoices for the source and associated with the parent company of the source must be paid in full; otherwise, DAQ cannot issue the source any permits. This includes the invoice for the permit fees resulting from this application.

Payment: Invoices must be paid by check, money order, or credit card. Make checks and money orders payable to **Division of Air Quality** or **DAQ**. Credit-card payments must be made in person at the DAQ main office.

Section J: Authority Granted

I authorize DAQ to transmit all communications, permits, and billing invoices by the primary communication method selected in Section D of this application. I acknowledge that if I select "Email," DAQ will transmit all listed items electronically. I further acknowledge that if I select "U.S. Postal Service," I may incur applicable postage fees.

Section K: Declaration

As the Responsible Official, I declare, under penalty of perjury under the laws of the state of Nevada, that the statements and information in this application and the attached supplemental documents and worksheets are true and correct. My signature acknowledges that I am subject to liability for perjury under NRS Chapter 199.145.

Ron Pena 1-9-24

Responsible Official Certification (original "wet" signature) Date

Ron Pena

Printed Name of Responsible Official

If this application is being submitted for an existing permit holder, it must be signed by an RO on file for this source.

APPENDIX A MINOR SOURCE PERMIT APPLICATION FORM

DECEMBER 2023

Environmental Resources Management
Inc.
8044 Montgomery Road
Suite 700 - 7336
Cincinnati, OH 45236

T +1 513 830 9030
F +1 513 830 9031

erm.com

Clark County Department of Environment and Sustainability
Division of Air Quality
4701 W. Russell Rd Suite 200
Las Vegas, NV 89118-2232

DATE
19 December 2023

SUBJECT
Verizon Wireless Las Vegas Belmont Mobile Switching Center Minor Source Permit Application

Dear Air Pollution Control Division:

Verizon Wireless (Verizon) is building a mobile switching center (facility) located at 2650 Belmont Street, North Las Vegas, Nevada (NV) 89030. With this Minor Source Permit Application (application), Verizon is proposing to construct and operate three Cummins diesel-fired emergency generators, with one (Gen-Admin) rated at 500 kilowatts electrical (kWe) and two (Gen-C and Gen-D) rated at 3,000 kWe. The three proposed generators are EPA Tier 2 certified and will each be equipped with a diesel fuel storage tank. Gen-Admin's diesel fuel storage tank is 2,600 gallons and Gen-C and Gen-D's diesel storage fuel tanks are 12,000 gallons each. These proposed fuel storage tanks are defined as insignificant activities and are exempt from permitting in accordance with Clark County Air Quality Regulation (AQR) 12.1.2(c)(9).

The facility is located in North Las Vegas, NV, a part of Clark County that is considered a "marginal" nonattainment area for 8-hour ozone. The potential to emit (PTE) of each regulated air pollutant from the facility, calculated based on maximum of 500 hours per year per generator at 100% operating load, is well below their corresponding Title V major source threshold established in AQR 12.3.2. The PTE of nitrogen oxides, the pollutant of concern from diesel engines, is less than 57 tons per year. As such, the facility will be a true minor source with respect to Title V major source.

With this application, Verizon has included the following documentation:

- Appendix A: Minor source permit application form.
- Appendix B: Site map and process flow diagram.
- Appendix C: Detailed emissions calculations, insignificant equipment/activities list and stack information; and
- Appendix D: Engine manufacturer specifications.

We appreciate your assistance in supporting this important business need. Should you have any questions or need any additional information regarding this application,

please contact me at (602) 320-0010 or Tiffany Cuni of Environmental Resources Management (ERM) at (513) 830-9062. Thank you.

Sincerely,

Ron Pena

Senior Manager – Network Performance

1/9/24

cc: Tiffany Cuni, ERM

Melanie Lamb, Verizon

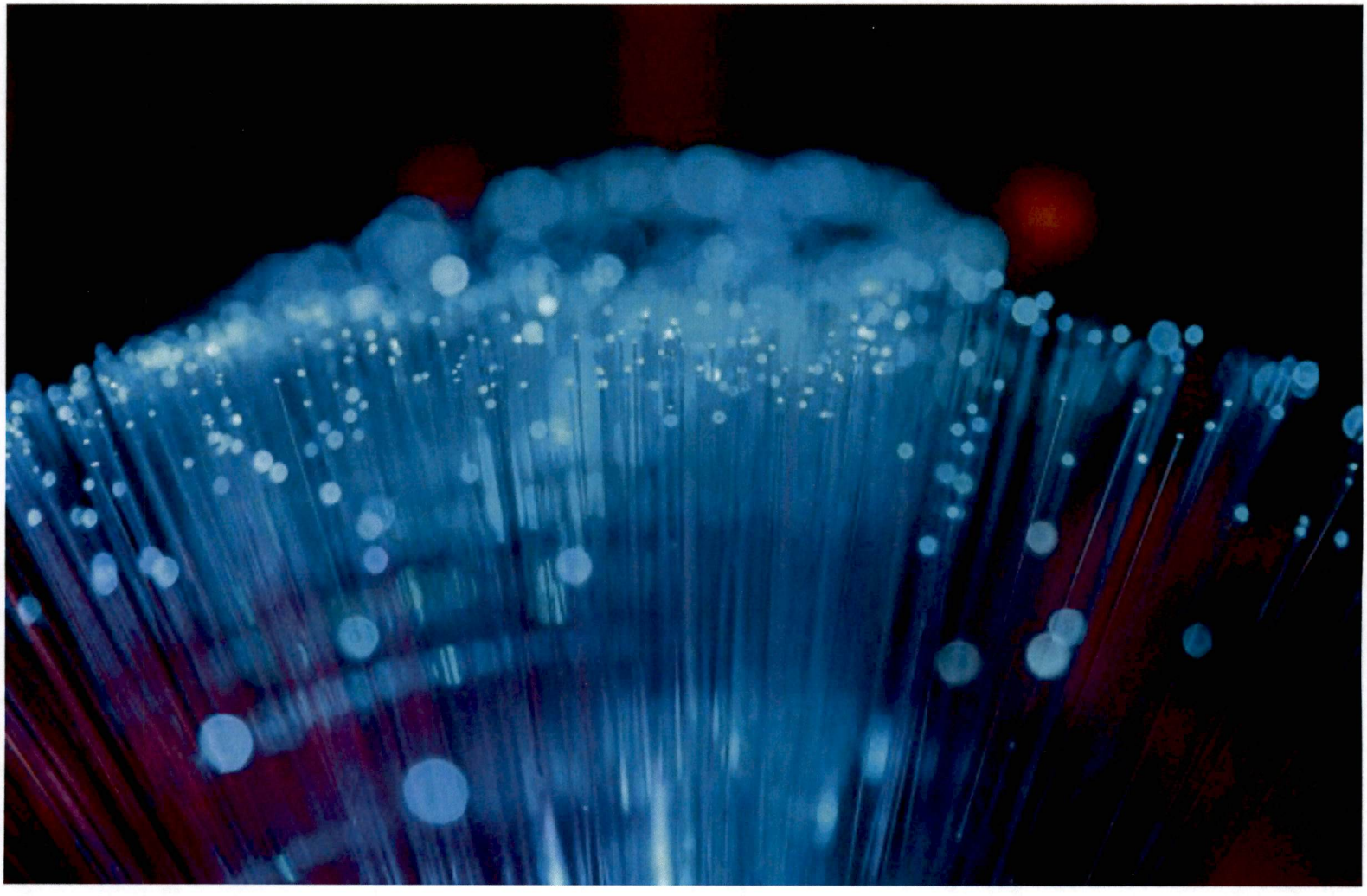
Minor Source Permit Application

Verizon Wireless Mobile Switching Center

PREPARED FOR
Verizon Wireless

DATE
5 December 2023

REFERENCE
0712934



SIGNATURE PAGE

Minor Source Permit Application

Verizon Wireless Mobile Switching Center

0712934

Tiffany A. Cuni
Partner-In-Charge

Scott Lehmann
Consulting Director

Environmental Resources Management, Inc.
8044 Montgomery Road,
Suite 700-7336
Cincinnati, OH 45236
T: 513-830-9030

CONTENTS

LIST OF TABLES

1. INTRODUCTION

Verizon Wireless (Verizon) is building a Mobile Switching Center (facility) located at 2650 Belmont Street, North Las Vegas, Nevada (NV), 89030. With this Minor Source Permit Application (application), Verizon is proposing to construct and operate three Cummins diesel-fired emergency generators, with one (Gen-Admin) rated at 500 kilowatt electrical (kWe) and two (Gen-C and Gen-D) rated at 3,000 kWe each. The three proposed generators are Tier 2 certified and will each be equipped with a diesel fuel storage tank. These proposed fuel storage tanks are defined as insignificant activities and are exempt from permitting in accordance with Clark County Air Quality Regulation (AQR) 12.1.2(c)(9).

2. PROJECT DESCRIPTION

With this application, Verizon seeks to authorize the construction and operation of a facility consisting of three new emergency generators. Gen-Admin is a Cummins 500 kWe diesel generator model 500DEFK, engine series QSX15. Gen-C and Gen-D are new Cummins 3,000 kWe diesel generators with QSK95 series engines. All proposed generators will be used to provide backup power for site operations in case of utility failure or other related on-site power failure. Gen-Admin is equipped with a diesel fuel storage tank with a capacity of 2,600 gallons and Gen-C and Gen-D are each equipped with a diesel fuel storage tank with a capacity of 12,000 gallons. All three proposed storage fuel tanks are considered insignificant activities and exempt from permitting per Clark County Air Quality Regulation (AQR) AQR 12.1.2(c)(9). The potential to emit (PTE) of nitrogen oxides (NO_X), the pollutant of concern from diesel-fired engines, is less than 57 tons per year (tpy). Therefore, the facility will be a true minor source with respect to Title V major source.

All three proposed emergency generators are subject to New Source Performance Standards (NSPS) Subpart IIII. As required by NSPS Subpart IIII, the emergency generators are Tier 2 certified and will be operated to comply with the corresponding testing and maintenance operating limit of 100 hours per year per unit. All emergency generators will each be equipped with a non-resettable hour meter to track compliance with this limit. Additionally, Verizon will only use ultra-low sulfur diesel (ULSD) fuel to maintain compliance with the fuel sulfur content usage restrictions per NSPS Subpart IIII. Logs will be kept to track generator hours of operation for both emergency and non-emergency runs and facilitate emissions calculations. The emergency generators will not be used for peak shaving or as part of an Emergency Demand Response Program as described in 40 CFR 60.4211(f)(2). Per 40 CFR 60.4211(f)(3), each emergency generator's operation for non-emergency purposes unrelated to maintenance and testing of the emergency generators is limited to 50 hours per calendar year. These 50 hours are included as part of the 100 hours per year limit for maintenance and testing. Additional regulatory discussion for the site is provided in Section 4.

3. EMISSION SUMMARY

This section presents a discussion of the anticipated emissions from the three proposed emergency generators and diesel storage tanks (insignificant activities). The facility's PTE has been estimated for the following regulated air pollutants: NO_X, carbon monoxide (CO), volatile organic compounds (VOC), sulfur dioxide (SO_2), filterable particulate matter (PM), particulate matter with a diameter of

10 micrometers (µm) or less (PM_{10}), particulate matter with a diameter of 2.5 µm or less ($PM_{2.5}$), and hazardous air pollutants (HAPs), and are included in Appendix C. The basis of the emissions calculations for the three proposed generators is derived from AP-42 Chapter 3, Section 3.4, *Large Stationary Diesel and All Stationary Dual-fuel Engines* dated 10/96 for all regulated pollutants. Engine manufacturer specification sheets (Appendix D) provide fuel consumption and generating rating information that was used for the calculation.

The site-wide PTE is based on maximum annual limit of 500 hours per year per generator using the highest emission facts (EFs) in pounds per hour (lb/hr) from all operating loads. Projected actual emissions from the facility are based on a typical 36 hours of operation per generator per year at 50% load from other Verizon facilities. Detailed emission estimates representing these operating scenarios are presented in Table 3-1 below. Maximum VOC emissions from all diesel fuel storage tanks (less than 0.01 tpy) are included in the site-wide PTE. An analysis of Reasonably Available Control Technology (RACT) is discussed in Section 4.

TABLE 3-1 SITE-WIDE EMISSIONS SUMMARY (TPY)

Pollutant	Site-Wide Projected Actual Emissions [a] (tpy)	Site-Wide PTE [b] (tpy)	RACT Threshold [c] AQR 12.1.1(j) (tpy)
VOC	0.06	1.66	20
NO_x	2.02	56.24	20
CO	0.46	12.89	35
PM	0.06	1.64	N/A
$PM_{2.5}$	0.06	1.64	7.5
PM_{10}	0.06	1.64	7.5
SO_2	1.02E-03	2.84E-02	40
Combined HAPs	9.22E-04	2.46E-02	-

Source: Appendix C: Emission Calculations

Note

[a] Projected actual emissions are based on 36 hours per generator per year of operation at 50% load.

[b] PTE is based 500 hours of operation with highest EF from all operating loads.

[c] RACT thresholds are based on AQR 12.1.3.6(c)(1)

4. REGULATORY APPLICABILITY

The facility is located in North Las Vegas, NV, a "marginal" nonattainment area for 8-hour ozone. The following regulatory analysis identifies potentially applicable local district and federal air quality regulations and explains why each regulation is or is not considered applicable to the proposed project.

4.1 FEDERAL REGULATIONS

4.1.1 NEW SOURCE PERFORMANCE STANDARDS

NSPS requires new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the applicable provisions. The NSPS regulations may be found in 40 CFR 60. An analysis of potentially applicable NSPS subparts is presented below.

4.1.1.1 SUBPART A – GENERAL PROVISIONS

Facilities subject to source-specific NSPS are also subject to the general provisions of NSPS Subpart A (40 CFR 60). Because the facility is subject to another 40 CFR 60 subpart, as discussed in Section 4.1.1.2, the provisions of Subpart A are applicable. NSPS Subpart A may require the following for facilities subject to a source-specific NSPS:

- Initial construction/reconstruction notifications
- Initial startup notifications
- Performance tests
- Performance test date initial notifications
- General monitoring requirements
- General recordkeeping requirements
- Semiannual monitoring system and/or excess emissions reports.

The facility will comply with the provisions of NSPS Subpart A, as applicable.

4.1.1.2 SUBPART IIII – NSPS FOR STATIONARY COMPRESSION IGNITION INTERNAL COMBUSTION ENGINES

NSPS Subpart IIII establishes emission standards and compliance requirements for the control of emissions from stationary compression ignition (CI) internal combustion engines (ICE) which are constructed, reconstructed, or modified after July 11, 2005.

With this application, Verizon is proposing to permit three CI ICEs that were constructed after July 2005. Therefore, this facility contains applicable units and is required to comply with the provisions of this subpart.

Because the applicable units are identified as emergency equipment, they will be equipped with a non-resettable hour meter and will not operate for greater than 100 hours per year for maintenance and testing purposes. The engines will comply with EPA Tier 2 emission standards, and the engines will comply with the fuel requirements of this subpart by using only 15 parts per million (ppm) or lower sulfur diesel fuel.

4.1.2 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

National Emission Standards for Hazardous Air Pollutants (NESHAP) are emission standards for HAP that are generally applicable to major sources of HAPs, but also apply to certain area sources of HAPs. A HAP major source is defined as having potential emissions equal to and in excess of 10 tpy for any individual HAP and/or 25 tpy for total HAPs. NESHAP apply to specific pollutant sources (40 CFR 61), or to sources in specifically regulated industrial source categories (CAA Section 112(d)), or on a case-by-case basis (Section 112(g) or 112(j)) for facilities not regulated as a specific

industrial source type (40 CFR 63). The facility will be an area source for HAPs. An applicability analysis of potentially applicable NESHAP (Part 63) subparts is presented below.

4.1.2.1 SUBPART A – GENERAL PROVISIONS

All affected sources are subject to the general provisions of NESHAP Subpart A unless specifically excluded by the source-specific NESHAP. NESHAP Subpart A requires initial notification, performance testing, recordkeeping, and monitoring, provides reference methods, and mandates general control device requirements for all other subparts as applicable.

4.1.2.2 SUBPART ZZZZ – NESHAP FOR STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES

NESHAP (40 CFR 63) Subpart ZZZZ provides HAP emission limitations and operating limitations for stationary reciprocating internal combustion engines (RICE), including emergency engines, located at facilities that are major or area sources of HAP emissions.

Verizon is proposing to permit three new CI ICEs The facility has the potential to emit less than 0.03 tons of combined HAP per year, as shown in the emissions calculations included in Appendix C. Thus, proposed HAP emissions are well below the major source threshold of 25 tpy combined HAP or 10 tpy for any single HAP, and the facility will remain an area source of HAP.

Per 40 CFR 63.6590(c)(1), Verizon will comply with the NSPS provisions in 40 CFR 60, Subpart IIII for the planned generator engines. Consequently, no further provisions under NESHAP Subpart ZZZZ will apply to these engines.

4.2 CLARK COUNTY AIR POLLUTION CONTROL REGULATIONS

The following Clark County AQR review identifies potentially applicable county air quality regulations and explains why each regulation is or is not considered applicable to the facility.

4.2.1 CLARK COUNTY AQR SECTION 12.0 – APPLICABILITY AND GENERAL REQUIREMENTS

4.2.1.1 AQR 12.0.1 - APPLICABILITY

Pursuant to 12.0.1.(b), the facility is subject to Section 12.1, *Permit Requirements for Minor Sources*, as the facility is located in an ozone nonattainment area and has a PTE of NO_X exceeding the threshold listed in Section 12.1.1(c) but less than the threshold listed in Section 12.3.2(r).

4.2.1.2 AQR 12.0.6 GENERAL REQUIREMENTS FOR RECORDS AND REPORTS

The facility will maintain records for at least five years to demonstrate compliance with applicable emission limits and any other conditions upon permit issuance per 12.0.6(a). Should the Control Officer request any information, Verizon will submit the information within 30 days per 12.0.6(b) and made available to the public for review as applicable per 12.0.6(c).

4.2.2 CLARK COUNTY AQR SECTION 12.1 – PERMIT REQUIREMENTS FOR MINOR SOURCES

The facility is located in an ozone nonattainment area and has a PTE of NO_X exceeding the threshold listed in Section 12.1.1(c) but less than the threshold listed in Section 12.3.2(r). Therefore, the facility is subject to AQR Section 12.1.

4.2.2.1 AQR 12.1.2 – EXEMPT AND INSIGNIFICANT EMISSIONS UNITS AND ACTIVITIES

This regulation establishes the definition of exempt and insignificant activities. Pursuant to 12.1.2(c)(9), the three diesel storage tanks from the three proposed emergency generators are significant activities and exempt from permitting due to their storage capacity being less than 40,000 gallons each and diesel's true vapor pressure being less than 1.5 pounds-per-square-inch absolute. Required information for these significant activities is included in Appendix C.

4.2.2.2 AQR 12.1.3 – PERMIT APPLICATION

Verizon is submitting this application with the required applicable information to obtain a permit to construct and operate its three proposed diesel-fired emergency generators and associated diesel fuel tanks.

Pursuant to 12.1.3.1(a), Verizon will not commence construction of, operate, or make a modification to the facility except in compliance with a minor source permit that authorizes such construction, operation, or modification.

Pursuant to 12.1.3.6(c)(1), Verizon shall include how RACT was determined and how compliance with RACT will be demonstrated for the pollutant that has a PTE that is significant. NO_X is the only regulated pollutant from the facility that has the PTE exceeding the significant threshold outlined in AQR 12.1.1(j). As such, Verizon is required to meet RACT requirements for NO_X. All generators will meet RACT requirements by complying with EPA Tier 2 emission standards and using ULSD fuel. A record search of the RACT/BACT/LAER (RBLC) Clearing House shows that multiple BACT selections for emergency generators are "compliant with NSPS Subpart IIII regulations and Tier 2 certification". Since BACT is equally as stringent as, if not more stringent than RACT, Verizon proposes that installing emergency generators that comply with EPA Tier 2 emission standards is consistent with other RACT determinations for emergency engines.

4.2.2.3 AQR 12.1.5 – PERMIT APPLICATION PROCESSING PROCEDURES

Pursuant to 12.1.5.3(a)(1)(A) and 12.1.5.3(a)(1)(B), the facility is a new minor source located within 1,000 feet of a school and residential area, and the facility's PTE for NO_X is above the public notice threshold of 40 tpy. Therefore, the facility is subject to public participation.

4.2.3 CLARK COUNTY AQR SECTION 13 – NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

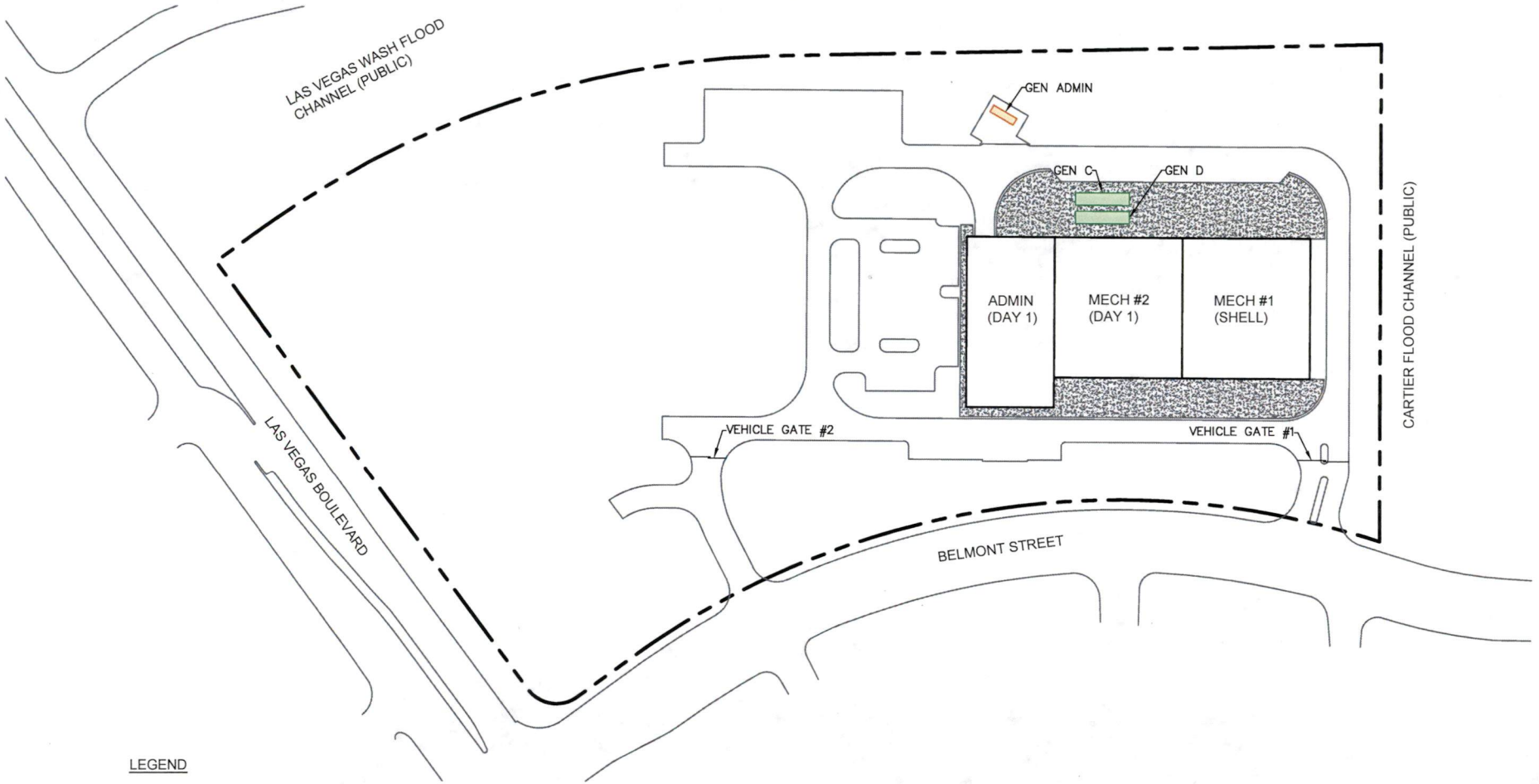
All regulations under 40 CFR Part 61 and Part 63 are incorporated by reference. Applicability to referenced regulations in 13.2 is included as part of the Federal Regulatory Applicability Review in Section 4.1 above.

4.2.4 CLARK COUNTY AQR SECTION 14 – NEW SOURCE PERFORMANCE STANDARDS

All regulations under 40 CFR Part 60 are incorporated by reference. Applicability to referenced regulations in 14.1 is included as part of the Federal Regulatory Applicability Review in Section 4.1 above.

APPENDIX B SITE MAP AND PROCESS FLOW DIAGRAM

DECEMBER 2023



LEGEND

- PROPERTY BOUNDARY - CLARK COUNTY ASSESSOR PARCEL NUMBER: 139-13-713-002
- EDGE OF PAVEMENT
- BUILDING
- GENERATOR (CUMMINS 3,000 kWe)
- GENERATOR (CUMMINS 500 kWe)
- CONCRETE

N

0 100 200

SCALE (IN FEET)

Rev.	Date	Description	By	Chk
0	12/5/23	FIGURE CREATION	DA	CH

ERM

FACILITY MAP

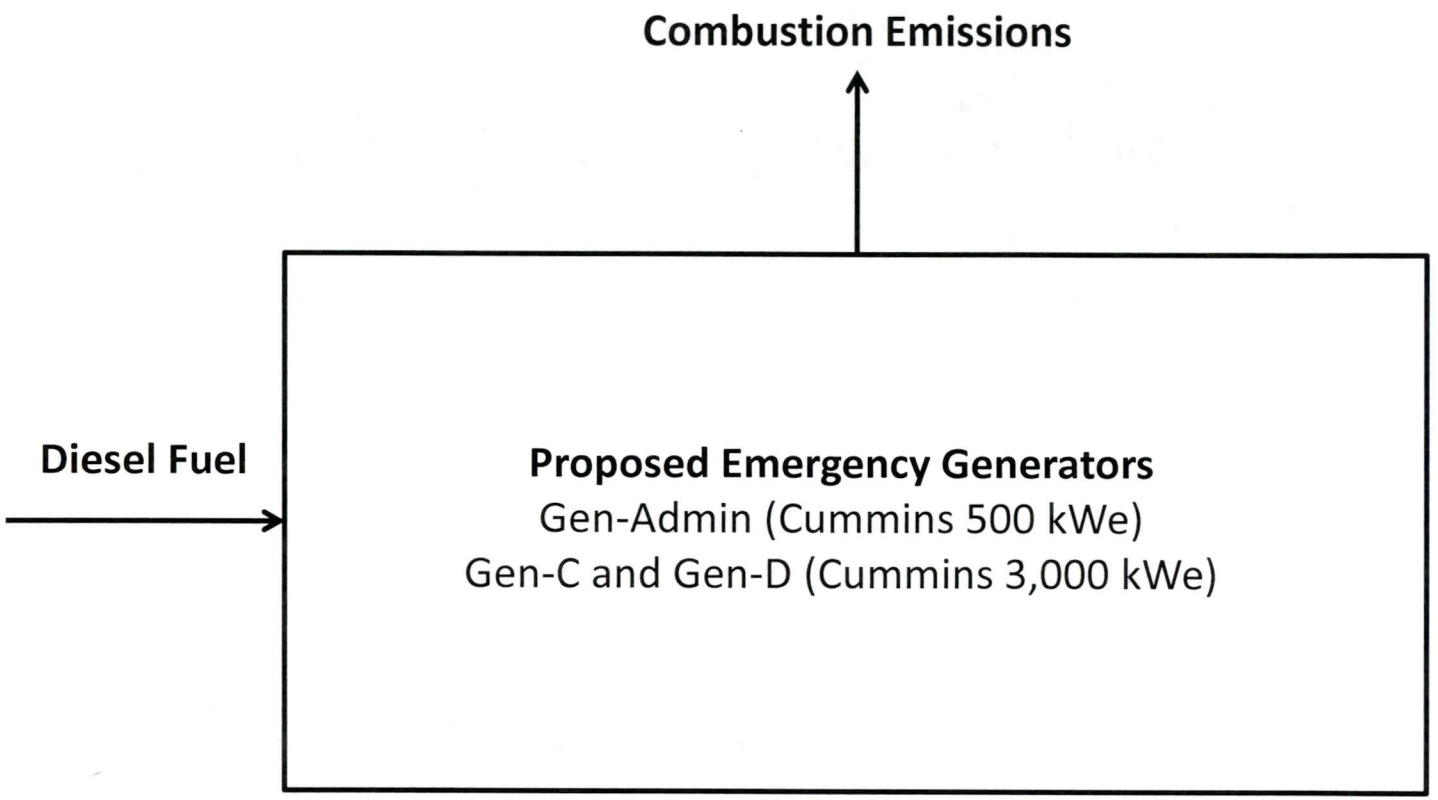
VERIZON
2650 BELMONT STREET
NORTH LAS VEGAS, NEVADA, 89030

REV. 0

SCALE	DESIGNED BY	PROJECT NUMBER	SHEET NO.
1" = 100'	CH	0712934	01
DATE DRAWN 12/05/2023	DRAWN BY DA		

Environmental Resources Management, Inc.

FILE PATH: \\usbdcfs02\data\Holland\Team\DMMV\Clntu-2\Verizon\0712934\0712934-01.dwg FACILITY MAP, PRINTED ON 12/6/2023 BY Dennis Aly



Environmental Resources Management		
DESIGN: B. WILDEY	DRAWN: C.HECK	CHKD.: Y. SHI
DATE: 11/6/2023	SCALE: n/a	REVISION: 0.0

Appendix B - Process Flow Diagram
Verizon Wireless Las Vegas Belmont Mobile Switching Center
North Las Vegas, Nevada

ERM

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APPENDIX C DETAILED EMISSION CALCULATIONS, INSIGNIFICANT EQUIPMENT/ACTIVITIES LIST AND STACK INFORMATION

DECEMBER 2023

Table 1 Emergency Generator Specifications and Fuel Limit Summary [1-5]

Description	Proposed Generators	
EPN	Gen-Admin	Gen-C and Gen-D
Manufacturer	Cummins	Cummins
Generator Model	500DEFK	C3000 D6e
Engine Model	QSX15-G9	
SCC Code	2-02-001-02	
Anticipated Installation Date	February 2024	
Anticipated Operation Date	Upon Permit Issuance	
Generator Rating (kWe)	500	3,000
Engine power output per unit (kWm)	563	3,213
Power (BHP)	755	4,309
Number of units	1	2
Annual Max Operating Hours Per Generator	500	500
Projected actual operating hours per gen per year (non-emergency) (hr/gen/yr)	36	36
Maximum NO_x emission factors of all loads (lb/gal)	0.529	0.466
Fuel type	Diesel	Diesel
Fuel high heat value (MMBtu/gal)	0.138	0.138
Fuel Consumption @ 100% load (gal/hr)	34.4	222

1. Proposed emergency generator Gen-Admin horsepower and fuel consumption obtained from manufacturer specification sheet of Cummins model 500DFEK, engine model QSX15-G9.
2. Proposed emergency generators Gen-C and Gen-D horsepower and fuel consumption obtained from manufacturer specification sheet of Cummins model 3000C D6e.
3. Per 40 CFR 60 Subpart IIII, maintenance and testing of emergency standby generators must not exceed 100 hours per year.
4. Anticipated operation is not expected to exceed 36 hours per generator per year.
5. Maximum annual hours of operation for all operation (emergency and non-emergency) will be limited to 500 hours per year per generator.

Table 2 Generator Manufacturer Specifications [1-2]

Load	Gen-Admin	Gen-C and Gen-D
	Fuel Consumption (gal/hr)	
25%	11.6	65
50%	18.8	115
75%	25.7	171
100%	34.4	222
Load	Power (BHP)	
25%	189	1,077
50%	378	2,155
75%	566	3,232
100%	755	4,309

1. Proposed emergency generator Gen-Admin horsepower and fuel consumption obtained from manufacturer specification sheet of Cummins model 500DFEK, engine model QSX15-G9. Engine power at 25%, 50% and 75% not available from manufacturer specification, therefore are estimated based on 100% load.
2. Proposed emergency generators Gen-C and Gen-D horsepower and fuel consumption obtained from manufacturer specification sheet of Cummins model 3000C D6e. Engine power at 25%, 50% and 75% not available from manufacturer specification, therefore are estimated based on 100% load.

Table 3 Gen-Admin (Cummins 500 kWe) Emission Factors [1-5]

Pollutant	25% Load		50% Load		75% Load		100% Load		Highest lb/hr
	lb/hp-hr	lb/hr	lb/hp-hr	lb/hr	lb/hp-hr	lb/hr	lb/hp-hr	lb/hr	
VOC	7.05E-04	0.13	7.05E-04	0.27	7.05E-04	0.40	7.05E-04	0.53	
NO_x	0.02	4.53	0.02	9.06	0.02	13.59	0.02	18.12	
CO	0.01	1.04	0.01	2.08	0.01	3.11	0.01	4.15	
PM	7.00E-04	0.13	7.00E-04	0.26	7.00E-04	0.40	7.00E-04	0.53	
PM_{10}	7.00E-04	0.13	7.00E-04	0.26	7.00E-04	0.40	7.00E-04	0.53	
$PM_{2.5}$	7.00E-04	0.13	7.00E-04	0.26	7.00E-04	0.40	7.00E-04	0.53	
SO_2	1.21E-05	2.29E-03	1.21E-05	4.58E-03	1.21E-05	6.87E-03	1.21E-05	9.16E-03	
Benzene	6.58E-06	1.24E-03	5.33E-06	2.01E-03	4.86E-06	2.75E-03	4.88E-06	3.68E-03	
Toluene	2.38E-06	4.50E-04	1.93E-06	7.29E-04	1.76E-06	9.97E-04	1.77E-06	1.33E-03	
Xylenes	1.64E-06	3.09E-04	1.33E-06	5.01E-04	1.21E-06	6.84E-04	1.21E-06	9.16E-04	
Formaldehyde	6.69E-07	1.26E-04	5.42E-07	2.05E-04	4.94E-07	2.80E-04	4.96E-07	3.75E-04	
Acetaldehyde	2.14E-07	4.03E-05	1.73E-07	6.54E-05	1.58E-07	8.94E-05	1.58E-07	1.20E-04	
Acrolein	6.68E-08	1.26E-05	5.42E-08	2.04E-05	4.94E-08	2.79E-05	4.95E-08	3.74E-05	
Naphthalene	1.10E-06	2.08E-04	8.93E-07	3.37E-04	8.14E-07	4.61E-04	8.17E-07	6.17E-04	
Combined HAP	1.27E-05	2.39E-03	1.03E-05	3.87E-03	9.34E-06	5.29E-03	9.38E-06	7.08E-03	

1. GEN-Admin emission factors for VOC, NO_x, CO, PM, PM_{10}, $PM_{2.5}$, and SO_2 obtained from AP-42 Section 3.4, Table 3.4-1.
2. Conservatively assumed PM = PM_{10} = $PM_{2.5}$
3. SO_2 emissions are based on AP-42 Section 3.4: Large Stationary Diesel And All Stationary Dual-fuel Engines, Table 3.4-1. SO_2 uses an emission rate of 8.09e-3 lb/hp-hr * Sulfur Content. Sulfur content of ultra-low sulfur diesel is 15 ppm.
4. HAP emissions are calculated based on AP-42 Section 3.4 Table 3.4-3 and Table 3.4-4.
5. Emission factors in (lb/hr) are converted from (lb/hp-hr) to (lb/hr) by multiplying by the corresponding horsepower (hp). Emission factors in (lb/gal) are calculated from (lb/hr) by dividing the (gal/hr) fuel usage at the corresponding operating load.

Table 4 Gen-C and Gen-D (Cummins 3,000 kWe) Emission Factors [1-5]

Pollutant	25% Load		50% Load		75% Load		100% Load	Highest lb/hr
	lb/hp-hr	lb/hr	lb/hp-hr	lb/hr	lb/hp-hr	lb/hr	lb/hp-hr	lb/hr
VOC	7.05E-04	0.76	7.05E-04	1.52	7.05E-04	2.28	7.05E-04	3.04
NO_x	0.02	25.85	0.02	51.71	0.02	77.56	0.02	103.42
CO	0.01	5.92	0.01	11.85	0.01	17.77	0.01	23.70
PM	7.00E-04	0.75	7.00E-04	1.51	7.00E-04	2.26	7.00E-04	3.02
PM_{10}	7.00E-04	0.75	7.00E-04	1.51	7.00E-04	2.26	7.00E-04	3.02
$PM_{2.5}$	7.00E-04	0.75	7.00E-04	1.51	7.00E-04	2.26	7.00E-04	3.02
SO_2	1.21E-05	1.31E-02	1.21E-05	2.61E-02	1.21E-05	3.92E-02	1.21E-05	5.23E-02
Benzene	6.46E-06	6.96E-03	5.72E-06	1.23E-02	5.67E-06	1.83E-02	5.52E-06	2.38E-02
Toluene	2.34E-06	2.52E-03	2.07E-06	4.46E-03	2.05E-06	6.63E-03	2.00E-06	8.61E-03
Xylenes	1.61E-06	1.73E-03	1.42E-06	3.06E-03	1.41E-06	4.55E-03	1.37E-06	5.91E-03
Formaldehyde	6.57E-07	7.08E-04	5.81E-07	1.25E-03	5.76E-07	1.86E-03	5.61E-07	2.42E-03
Acetaldehyde	2.10E-07	2.26E-04	1.86E-07	4.00E-04	1.84E-07	5.95E-04	1.79E-07	7.72E-04
Acrolein	6.56E-08	7.07E-05	5.80E-08	1.25E-04	5.75E-08	1.86E-04	5.60E-08	2.41E-04
Naphthalene	1.08E-06	1.17E-03	9.58E-07	2.06E-03	9.49E-07	3.07E-03	9.24E-07	3.98E-03
Combined HAP	1.24E-05	1.34E-02	1.10E-05	2.37E-02	1.09E-05	3.52E-02	1.06E-05	4.57E-02

1. Gen-C and Gen-D emission factors for VOC, NO_x, CO, PM, PM_{10}, $PM_{2.5}$, and SO_2 obtained from AP-42 Section 3.4, Table 3.4-1.
2. Conservatively assumed PM = PM_{10} = $PM_{2.5}$
3. SO_2 emissions are based on AP-42 Section 3.4: Large Stationary Diesel And All Stationary Dual-fuel Engines, Table 3.4-1. SO_2 uses an emission rate of 8.09e-3 lb/hp-hr * Sulfur Content. Sulfur content of ultra-low sulfur diesel is 15 ppm.
4. HAP emissions are calculated based on AP-42 Section 3.4 Table 3.4-3 and Table 3.4-4.
5. Emission factors in (lb/hr) are converted from (lb/hp-hr) to (lb/hr) by multiplying by the corresponding horsepower (hp). Emission factors in (lb/gal) are calculated from (lb/hr) by dividing the (gal/hr) fuel usage at the corresponding operating load.

Table 5 Site-wide Projected Actual Emissions [1]

Pollutant	Projected Actual Emissions per Source Type (tpy)		Site-wide Projected Actual Emissions (tpy)
	Gen-Admin	Gen-C and Gen-D	
VOC [2]	0.005	0.05	0.06
NO_x	0.16	1.86	2.02
CO	0.04	0.43	0.46
PM	0.005	0.05	0.06
PM_{10}	0.005	0.05	0.06
$PM_{2.5}$	0.005	0.05	0.06
SO_2	8.25E-05	9.41E-04	1.02E-03
Benzene	3.62E-05	4.43E-04	4.80E-04
Toluene	1.31E-05	1.61E-04	1.74E-04
Xylenes	9.01E-06	1.10E-04	1.19E-04
Formaldehyde	3.68E-06	4.51E-05	4.88E-05
Acetaldehyde	1.18E-06	1.44E-05	1.56E-05
Acrolein	3.68E-07	4.50E-06	4.87E-06
Naphthalene	6.07E-06	7.43E-05	8.03E-05
Combined HAP	6.97E-05	8.52E-04	9.22E-04

1. Projected actual emissions are based on 36 hours per year per generator for non-emergency use at 50% standby load.

Table 6 Site-wide Potential to Emit (PTE) [1]

Pollutant	Potential to Emit per Source Type (tpy)		Site-wide PTE (tpy)
	Gen-Admin	Gen-C and Gen-D	
VOC [2]	0.13	1.52	1.66
NO_x	4.53	51.71	56.24
CO	1.04	11.85	12.89
PM	0.13	1.51	1.64
PM_{10}	0.13	1.51	1.64
$PM_{2.5}$	0.13	1.51	1.64
SO_2	2.29E-03	2.61E-02	2.84E-02
Benzene	9.21E-04	1.19E-02	1.28E-02
Toluene	3.33E-04	4.30E-03	4.64E-03
Xylenes	2.29E-04	2.96E-03	3.19E-03
Formaldehyde	9.36E-05	1.21E-03	1.30E-03
Acetaldehyde	2.99E-05	3.86E-04	4.16E-04
Acrolein	9.35E-06	1.21E-04	1.30E-04
Naphthalene	1.54E-04	1.99E-03	2.15E-03
Combined HAP	1.77E-03	2.29E-02	2.46E-02

1. PTE is based on 500 hours per year per generator for both emergency and non-emergency operations using the highest lb/hr emission factors of all loads.
2. Site-wide VOC emissions include VOC emissions from diesel storage tanks as shown in Table 7 below.

Table 7 Insignificant Activities - Tanks and Associated VOC Emissions [1-3]

Description	Tanks per Source Type	
	Gen-Admin	Gen-C and Gen-D
Tank Capacity per Tank (gal)	2,600	12,000
Anticipated Installation Date	February 2024	
Anticipated Operation Date	Upon Permit Issuance	
Tank Throughput per Tank (gal/yr)	17,200	111,000
Working Losses per Tank (lb/yr)	0.7752	5.0026
Breathing Losses per Tank (lb/yr)	0.7542	3.4313
Total Losses per Tank (lb/yr)	1.5294	8.4339
Number of Tanks	1	2
Annual Site-wide VOC Emissions (tpy)	0.009	

1. Tank throughput is based on maximum operating hours of 500 hrs/yr/gen at 100% load.
2. These diesel fuel tanks are insiginificant activities generator per AQR 12.1.2(c)(9).
3. VOC emissions based on Emission Master Tanks 8.4.5.10, version date 5/1/2023.

Table 8 Stack Information [1-2]

Description	Gen-Admin	Gen-C and Gen-D
Stack Location	See Map	See Map
Height Above Grade (in)	**71.3**	**144**
Diameter	n/a	n/a
Exhaust Flow Rate (scfm)	3,625	26,265
Temperature (°F)	901	912

1. Proposed emergency generator Gen-Admin stack information obtained from manufacturer specification sheet of Cummins model 500DFEK, engine model QSX15-G9 standby rating.
2. Proposed emergency generators Gen-C and Gen-D stack information obtained from manufacturer specification sheet of Cummins model 3000C D6e.

Table 1 Emergency Generator Specifications and Fuel Limit Summary [1-5]

Description	Proposed Generators	
EPN	Gen-Admin	Gen-C and Gen-D
Manufacturer	Cummins	Cummins
Generator Model	500DEFK	C3000 D6e
Engine Model	QSX15-G9	
SCC Code	2-02-001-02	
Anticipated Installation Date	February 2024	
Anticipated Operation Date	Upon Permit Issuance	
Generator Rating (kWe)	500	3,000
Engine power output per unit (kWm)	563	3,213
Power (BHP)	755	4,309
Number of units	1	2
Annual Max Operating Hours Per Generator	500	500
Projected actual operating hours per gen per year (non-emergency) (hr/gen/yr)	36	36
Maximum NO_x emission factors of all loads (lb/gal)	0.529	0.466
Fuel type	Diesel	Diesel
Fuel high heat value (MMBtu/gal)	0.138	0.138
Fuel Consumption @ 100% load (gal/hr)	34.4	222

1. Proposed emergency generator Gen-Admin horsepower and fuel consumption obtained from manufacturer specification sheet of Cummins model 500DFEK, engine model QSX15-G9.
2. Proposed emergency generators Gen-C and Gen-D horsepower and fuel consumption obtained from manufacturer specification sheet of Cummins model 3000C D6e.
3. Per 40 CFR 60 Subpart IIII, maintenance and testing of emergency standby generators must not exceed 100 hours per year.
4. Anticipated operation is not expected to exceed 36 hours per generator per year.
5. Maximum annual hours of operation for all operation (emergency and non-emergency) will be limited to 500 hours per year per generator.

Table 2 Generator Manufacturer Specifications [1-2]

Load	Gen-Admin	Gen-C and Gen-D
	Fuel Consumption (gal/hr)	
25%	11.6	65
50%	18.8	115
75%	25.7	171
100%	34.4	222
Load	Power (BHP)	
25%	189	1,077
50%	378	2,155
75%	566	3,232
100%	755	4,309

1. Proposed emergency generator Gen-Admin horsepower and fuel consumption obtained from manufacturer specification sheet of Cummins model 500DFEK, engine model QSX15-G9. Engine power at 25%, 50% and 75% not available from manufacturer specification, therefore are estimated based on 100% load.
2. Proposed emergency generators Gen-C and Gen-D horsepower and fuel consumption obtained from manufacturer specification sheet of Cummins model 3000C D6e. Engine power at 25%, 50% and 75% not available from manufacturer specification, therefore are estimated based on 100% load.

Table 3 Gen-Admin (Cummins 500 kWe) Emission Factors [1-5]

Pollutant	25% Load		50% Load		75% Load		100% Load	Highest lb/hr
	lb/hp-hr	lb/hr	lb/hp-hr	lb/hr	lb/hp-hr	lb/hr	lb/hp-hr	lb/hr
VOC	7.05E-04	0.13	7.05E-04	0.27	7.05E-04	0.40	7.05E-04	0.53
NO_x	0.02	4.53	0.02	9.06	0.02	13.59	0.02	18.12
CO	0.01	1.04	0.01	2.08	0.01	3.11	0.01	4.15
PM	7.00E-04	0.13	7.00E-04	0.26	7.00E-04	0.40	7.00E-04	0.53
PM_{10}	7.00E-04	0.13	7.00E-04	0.26	7.00E-04	0.40	7.00E-04	0.53
$PM_{2.5}$	7.00E-04	0.13	7.00E-04	0.26	7.00E-04	0.40	7.00E-04	0.53
SO_2	1.21E-05	2.29E-03	1.21E-05	4.58E-03	1.21E-05	6.87E-03	1.21E-05	9.16E-03
Benzene	6.58E-06	1.24E-03	5.33E-06	2.01E-03	4.86E-06	2.75E-03	4.88E-06	3.68E-03
Toluene	2.38E-06	4.50E-04	1.93E-06	7.29E-04	1.76E-06	9.97E-04	1.77E-06	1.33E-03
Xylenes	1.64E-06	3.09E-04	1.33E-06	5.01E-04	1.21E-06	6.84E-04	1.21E-06	9.16E-04
Formaldehyde	6.69E-07	1.26E-04	5.42E-07	2.05E-04	4.94E-07	2.80E-04	4.96E-07	3.75E-04
Acetaldehyde	2.14E-07	4.03E-05	1.73E-07	6.54E-05	1.58E-07	8.94E-05	1.58E-07	1.20E-04
Acrolein	6.68E-08	1.26E-05	5.42E-08	2.04E-05	4.94E-08	2.79E-05	4.95E-08	3.74E-05
Naphthalene	1.10E-06	2.08E-04	8.93E-07	3.37E-04	8.14E-07	4.61E-04	8.17E-07	6.17E-04
Combined HAP	1.27E-05	2.39E-03	1.03E-05	3.87E-03	9.34E-06	5.29E-03	9.38E-06	7.08E-03

1. GEN-Admin emission factors for VOC, NO_x, CO, PM, PM_{10}, $PM_{2.5}$, and SO_2 obtained from AP-42 Section 3.4, Table 3.4-1.
2. Conservatively assumed $PM = PM_{10} = PM_{2.5}$
3. SO_2 emissions are based on AP-42 Section 3.4: Large Stationary Diesel And All Stationary Dual-fuel Engines, Table 3.4-1. SO_2 uses an emission rate of 8.09e-3 lb/hp-hr * Sulfur Content. Sulfur content of ultra-low sulfur diesel is 15 ppm.
4. HAP emissions are calculated based on AP-42 Section 3.4 Table 3.4-3 and Table 3.4-4.
5. Emission factors in (lb/hr) are converted from (lb/hp-hr) to (lb/hr) by multiplying by the corresponding horsepower (hp). Emission factors in (lb/gal) are calculated from (lb/hr) by dividing the (gal/hr) fuel usage at the corresponding operating load.

Table 4 Gen-C and Gen-D (Cummins 3,000 kWe) Emission Factors [1-5]

Pollutant	25% Load		50% Load		75% Load		100% Load	Highest lb/hr
	lb/hp-hr	lb/hr	lb/hp-hr	lb/hr	lb/hp-hr	lb/hr	lb/hp-hr	lb/hr
VOC	7.05E-04	0.76	7.05E-04	1.52	7.05E-04	2.28	7.05E-04	3.04
NO_x	0.02	25.85	0.02	51.71	0.02	77.56	0.02	103.42
CO	0.01	5.92	0.01	11.85	0.01	17.77	0.01	23.70
PM	7.00E-04	0.75	7.00E-04	1.51	7.00E-04	2.26	7.00E-04	3.02
PM_{10}	7.00E-04	0.75	7.00E-04	1.51	7.00E-04	2.26	7.00E-04	3.02
$PM_{2.5}$	7.00E-04	0.75	7.00E-04	1.51	7.00E-04	2.26	7.00E-04	3.02
SO_2	1.21E-05	1.31E-02	1.21E-05	2.61E-02	1.21E-05	3.92E-02	1.21E-05	5.23E-02
Benzene	6.46E-06	6.96E-03	5.72E-06	1.23E-02	5.67E-06	1.83E-02	5.52E-06	2.38E-02
Toluene	2.34E-06	2.52E-03	2.07E-06	4.46E-03	2.05E-06	6.63E-03	2.00E-06	8.61E-03
Xylenes	1.61E-06	1.73E-03	1.42E-06	3.06E-03	1.41E-06	4.55E-03	1.37E-06	5.91E-03
Formaldehyde	6.57E-07	7.08E-04	5.81E-07	1.25E-03	5.76E-07	1.86E-03	5.61E-07	2.42E-03
Acetaldehyde	2.10E-07	2.26E-04	1.86E-07	4.00E-04	1.84E-07	5.95E-04	1.79E-07	7.72E-04
Acrolein	6.56E-08	7.07E-05	5.80E-08	1.25E-04	5.75E-08	1.86E-04	5.60E-08	2.41E-04
Naphthalene	1.08E-06	1.17E-03	9.58E-07	2.06E-03	9.49E-07	3.07E-03	9.24E-07	3.98E-03
Combined HAP	1.24E-05	1.34E-02	1.10E-05	2.37E-02	1.09E-05	3.52E-02	1.06E-05	4.57E-02

1. Gen-C and Gen-D emission factors for VOC, NO_x, CO, PM, PM_{10}, $PM_{2.5}$, and SO_2 obtained from AP-42 Section 3.4, Table 3.4-1.
2. Conservatively assumed PM = PM_{10} = $PM_{2.5}$
3. SO_2 emissions are based on AP-42 Section 3.4: Large Stationary Diesel And All Stationary Dual-fuel Engines, Table 3.4-1. SO_2 uses an emission rate of 8.09e-3 lb/hp-hr * Sulfur Content. Sulfur content of ultra-low sulfur diesel is 15 ppm.
4. HAP emissions are calculated based on AP-42 Section 3.4 Table 3.4-3 and Table 3.4-4.
5. Emission factors in (lb/hr) are converted from (lb/hp-hr) to (lb/hr) by multiplying by the corresponding horsepower (hp). Emission factors in (lb/gal) are calculated from (lb/hr) by dividing the (gal/hr) fuel usage at the corresponding operating load.

Table 5 Site-wide Projected Actual Emissions [1]

Pollutant	Projected Actual Emissions per Source Type (tpy)		Site-wide Projected Actual Emissions (tpy)
	Gen-Admin	Gen-C and Gen-D	
VOC [2]	0.005	0.05	0.06
NO_x	0.16	1.86	2.02
CO	0.04	0.43	0.46
PM	0.005	0.05	0.06
PM_{10}	0.005	0.05	0.06
$PM_{2.5}$	0.005	0.05	0.06
SO_2	8.25E-05	9.41E-04	1.02E-03
Benzene	3.62E-05	4.43E-04	4.80E-04
Toluene	1.31E-05	1.61E-04	1.74E-04
Xylenes	9.01E-06	1.10E-04	1.19E-04
Formaldehyde	3.68E-06	4.51E-05	4.88E-05
Acetaldehyde	1.18E-06	1.44E-05	1.56E-05
Acrolein	3.68E-07	4.50E-06	4.87E-06
Naphthalene	6.07E-06	7.43E-05	8.03E-05
Combined HAP	6.97E-05	8.52E-04	9.22E-04

1. Projected actual emissions are based on 36 hours per year per generator for non-emergency use at 50% standby load.

Table 6 Site-wide Potential to Emit (PTE) [1]

Pollutant	Potential to Emit per Source Type (tpy)		Site-wide PTE (tpy)
	Gen-Admin	Gen-C and Gen-D	
VOC [2]	0.13	1.52	1.66
NO_x	4.53	51.71	56.24
CO	1.04	11.85	12.89
PM	0.13	1.51	1.64
PM_{10}	0.13	1.51	1.64
$PM_{2.5}$	0.13	1.51	1.64
SO_2	2.29E-03	2.61E-02	2.84E-02
Benzene	9.21E-04	1.19E-02	1.28E-02
Toluene	3.33E-04	4.30E-03	4.64E-03
Xylenes	2.29E-04	2.96E-03	3.19E-03
Formaldehyde	9.36E-05	1.21E-03	1.30E-03
Acetaldehyde	2.99E-05	3.86E-04	4.16E-04
Acrolein	9.35E-06	1.21E-04	1.30E-04
Naphthalene	1.54E-04	1.99E-03	2.15E-03
Combined HAP	1.77E-03	2.29E-02	2.46E-02

1. PTE is based on 500 hours per year per generator for both emergency and non-emergency operations using the highest lb/hr emission factors of all loads.
2. Site-wide VOC emissions include VOC emissions from diesel storage tanks as shown in Table 7 below.

Table 7 Insignificant Activities - Tanks and Associated VOC Emissions [1-3]

Description	Tanks per Source Type	
	Gen-Admin	Gen-C and Gen-D
Tank Capacity per Tank (gal)	2,600	12,000
Anticipated Installation Date	February 2024	
Anticipated Operation Date	Upon Permit Issuance	
Tank Throughput per Tank (gal/yr)	17,200	111,000
Working Losses per Tank (lb/yr)	0.7752	5.0026
Breathing Losses per Tank (lb/yr)	0.7542	3.4313
Total Losses per Tank (lb/yr)	1.5294	8.4339
Number of Tanks	1	2
Annual Site-wide VOC Emissions (tpy)	0.009	

1. Tank throughput is based on maximum operating hours of 500 hrs/yr/gen at 100% load.
2. These diesel fuel tanks are insiginificant activities generator per AQR 12.1.2(c)(9).
3. VOC emissions based on Emission Master Tanks 8.4.5.10, version date 5/1/2023.

Table 8 Stack Information [1-2]

Description	Gen-Admin	Gen-C and Gen-D
Stack Location	See Map	See Map
Height Above Grade (in)	**71.3**	**144**
Diameter	n/a	n/a
Exhaust Flow Rate (scfm)	3,625	26,265
Temperature (°F)	901	912

1. Proposed emergency generator Gen-Admin stack information obtained from manufacturer specification sheet of Cummins model 500DFEK, engine model QSX15-G9 standby rating.
2. Proposed emergency generators Gen-C and Gen-D stack information obtained from manufacturer specification sheet of Cummins model 3000C D6e.

Title Page

Product:
Process:
Process Cycle Time: 365 days
Final Product Amount: 128200.0 gal
Evaluation Date: 12/15/2023
File Name: C:\Users\Yvonne.Shi\Documents\ERM\Quality Technology Services - Air Permitting Management - Documents\4. Other\Holder Verizon LV\ref\tank emish 12-15-23.emm
Connected Database: \\azusevmlic01\emtanks\Emaster
Calculation type: MACT98
Condenser Calc. type: Single Stage
Charge Calc. type: Initial Composition
Material Balance: No Emissions Subtracted
Last Saved User: Yvonne.Shi
Last Saved Time: 10:34:50 AM, 12/15/2023
Comment:

Defined Activities

1) [Storage] 2600 Gal Las Vegas
2) [Storage] 12000 Gal Las Vegas

1: Storage Tank Activity

Title: 2600 Gal Las Vegas
Start Date: 1/1/2023
End Date: 12/31/2023
Elapsed Time: 365.0 days
Vent ID:
Noncondensable: Air @ 0 scfh Saturation: 100% Pressure: 703.1293 mmHg
Using Monthly Avg. Temp.
Location: Nevada, Las Vegas Volume Throughput: 17200.0 gal
Crude Oil Factor-Kc: 1

Vessel Name: 2,600 Las Vegas
Void Vol.: 2,665.87 gal Work Vol.: 2,600 gal
No Control Devices

Final Contents 2600 gal 18465.0322 lb 9.08 °C

[Liquid Phase]	Weight (lb)	Pure-Vp (mmHg)	W[i]	X[i]	A[i]	X*Vp*A (mmHg)
Distillate Fuel Oil No. 2	18465.0322	0.221	1.0	1.0	1	0.221

Emissions From Vessel: 2,600 Las Vegas

[Non Condensables]	Effective Vp (mm Hg)	Working (lb)	Breathing (lb)	Total (lb)	Rate (lb/hr)
Air	702.5873	159.1119	146.39	305.5019	0.0349

[Condensables]	(mm Hg)	(lb)	(lb)	(lb)	(lb/hr)
Distillate Fuel Oil No. 2	0.542	0.7752	0.7542	1.5294	2.0e-4

2: Storage Tank Activity

Title: 12000 Gal Las Vegas
Start Date: 1/1/2023
End Date: 12/31/2023
Elapsed Time: 365.0 days
Vent ID:
Noncondensable: Air @ 0 scfh Saturation: 100% Pressure: 703.1293 mmHg
Using Monthly Avg. Temp.
Location: Nevada, Las Vegas Volume Throughput: 111000.0 gal
Crude Oil Factor-Kc: 1

Vessel Name: 12000 Gal Las Vegas
Void Vol.: 12,144.01 gal Work Vol.: 12,000 gal
No Control Devices

Final Contents 12000.0 gal 85223.2256 lb 9.08 °C

[Liquid Phase]	Weight (lb)	Pure-Vp (mmHg)	W[i]	X[i]	A[i]	X*Vp*A (mmHg)
Distillate Fuel Oil No. 2	85223.2256	0.221	1.0	1.0	1	0.221

Emissions From Vessel: 12000 Gal Las Vegas

[Non Condensables]	Effective Vp (mm Hg)	Working (lb)	Breathing (lb)	Total (lb)	Rate (lb/hr)
Air	702.5901	1026.8266	666.819	1693.6456	0.1933

[Condensables]	(mm Hg)	(lb)	(lb)	(lb)	(lb/hr)
Distillate Fuel Oil No. 2	0.5391	5.0026	3.4313	8.4339	0.001

Summary Page

Emissions for (Unspecified Vent):

	CAS	Avg. Rate	Max. Rate	Total Weight
Air	132259-10-0	0.2282 lb/hr	0.1933 lb/hr	1999.1474 lb
Distillate Fuel Oil No. 2				
	64742-47-8	0.0011 lb/hr	0.001 lb/hr	9.9633 lb

Total emissions for all vents:

	CAS	Avg. Rate	Max. Rate	Total Weight
Air	132259-10-0	0.2282 lb/hr	0.1933 lb/hr	1999.1474 lb
Distillate Fuel Oil No. 2				
	64742-47-8	0.0011 lb/hr	0.001 lb/hr	9.9633 lb

APPENDIX D ENGINE MANUFACTURER SPECIFICATIONS

DECEMBER 2023

Specification sheet

Diesel generator set QSX15 series engine

450 kW – 500 kW Standby

Description

Cummins® commercial generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary standby and prime power applications.

Features

Cummins heavy-duty engine - Rugged 4-cycle, industrial diesel delivers reliable power, low emissions and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Permanent Magnet Generator (PMG) - Offers enhanced motor starting and fault clearing short-circuit capability.

Control system - The PowerCommand® electronic control is standard equipment and provides total genset system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, AmpSentry™ protection, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

Cooling system - Standard integral set-mounted radiator system, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

Enclosures - Optional weather protective and sound attenuated enclosures are available.

Fuel tanks - Dual wall sub-base fuel tanks are also available.

NFPA - The genset accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor network.

	Standby rating	Prime rating	Continuous rating	Data sheets
Model	60 Hz kW (kVA)	60 Hz kW (kVA)	60 Hz kW (kVA)	60 Hz
DFEJ	450 (563)	410 (513)		D-3400
DFEK	500 (625)	455 (569)		D-3401

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Generator set specifications

Governor regulation class	ISO 8528 part 1 Class G3
Voltage regulation, no load to full load	± 0.5%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
EMS compatibility	IEC 61000-4-2: Level 4 Electrostatic discharge IEC 61000-4-3: Level 3 Radiated susceptibility

Engine specifications

Design	Turbocharged with air-to-air charge air-cooling
Bore	136.9 mm (5.39 in.)
Stroke	168.9 mm (6.65 in.)
Displacement	14.9 L (912.0 in^3)
Cylinder block	Cast iron with replaceable wet liners, in-line 6 cylinder
Battery capacity	1400 Amps minimum at ambient temperature 0 °C (32 °F)
Battery charging alternator	35 Amps
Starting voltage	24 volt, negative ground
Fuel system	Full authority electronic (FAE) Cummings HPI-TP
Fuel filter	
Air cleaner type	
Lube oil filter type(s)	Single spin-on combination full flow and bypass filters
Standard cooling system	40 °C (104 °F) ambient radiator

Alternator specifications

Design	Brushless, 4 pole, drip-proof revolving field
Stator	2/3 pitch
Rotor	Single bearing, flexible discs
Insulation system	Class H
Standard temperature rise	125 °C standby at 40 °C ambient
Exciter type	PMG (Permanent Magnet Generator)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform total harmonic distortion (THDV)	< 5% no load to full linear load, < 3% for any single harmonic
Telephone influence factor (TIF)	< 50% per NEMA MG1-22.43
Telephone harmonic factor (THF)	< 3%

Available voltages

60 Hz Line – Neutral/Line - Line

- 110/190
- 110/220
- 115/200
- 115/230
- 120/208
- 127/220
- 139/240
- 220/380
- 230/400
- 240/416
- 255/440
- 277/480
- 347/600

Note: Consult factory for other voltages.

Generator set options

Engine

- 208/240/480 V thermostatically controlled coolant heater for ambient above 4.5 °C (40°F)
- 208/240/480 V thermostatically controlled coolant heater for ambient below 4.5 °C (40°F)
- 120 V 300 W lube oil heater
- Heavy duty air cleaner with safety element

Alternator

- 80 °C rise
- 105 °C rise
- 150 °C rise
- 120/240 V 200 W anti-condensation heater

Exhaust system

- Critical grade exhaust silencer
- Exhaust packages
- Industrial grade exhaust silencer
- Residential grade exhaust silencer

Fuel system

- 1022 L (270 gal) sub-base tank
- 1136 L (300 gal) sub-base tank
- 1514 L (400 gal) sub-base tank
- 1893 L (500 gal) sub-base tank
- 2271 L (600 gal) sub-base tank
- 2498 L (660 gal) sub-base tank
- 3218 L (850 gal) sub-base tank
- 6435 L (1700 gal) sub-base tank
- 9558 L (2525 gal) sub-base tank

Cooling system

- High ambient 50 °C radiator

Control panel

- PC 3.3
- PC 3.3 with MLD
- 120/240 V 100 W control anti-condensation heater
- Ground fault indication
- Remote fault signal package
- Run relay package

Generator set

- AC entrance box
- Battery
- Battery charger
- Export box packaging
- UL 2200 Listed
- Main line circuit breaker
- Paralleling accessories
- Remote annunciator panel
- Spring isolators
- Enclosure: aluminium, steel, weather protective or sound attenuated
- 2 year standby power warranty
- 2 year prime power warranty
- 5 year basic power warranty
- 10 year major components warranty

*Note: Some options may not be available on all models - consult factory for availability.

Control system 2.3

The PowerCommand 2.3 control system - An integrated generator set control system providing voltage regulation, engine protection, generator protection, operator interface and isochronous governing (optional).

Control – Provides battery monitoring and testing features and smart-starting control system.

InPower™ – PC-based service tool available for detailed diagnostics.

PCCNet RS485 – Network interface (standard) to devices such as remote annunciator for NFPA 110 applications.

Control boards – Potted for environmental protection.

Ambient operation – Suitable for operation in ambient temperatures from -40 °C to +70 °C and altitudes to 13,000 feet (5000 meters). Prototype tested - UL, CSA and CE compliant.

AC protection

- AmpSentry protective relay
- Over current warning and shutdown
- Over and under voltage shutdown
- Over and under frequency shutdown
- Over excitation (loss of sensing) fault
- Field overload
- Overload warning
- Reverse kW shutdown
- Reverse Var shutdown
- Short circuit protection

Engine protection

- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- High, low and weak battery voltage warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown
- Fuel-in-rupture-basin warning or shutdown

Operator/display panel

- Manual off switch
- 128 x 128 Alpha-numeric display with push button access for viewing engine and alternator data and providing setup, controls and adjustments (English or international symbols)
- LED lamps indicating genset running, not in auto, common warning, common shutdown, manual run mode and remote start
- Suitable for operation in ambient temperatures from -20 °C to +70 °C

Alternator data

- Line-to-Neutral AC volts
- Line-to-Line AC volts
- 3-phase AC current
- Frequency
- kVA, kW, power factor

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature

Control functions

- Time delay start and cool down
- Glow plug control (some models)
- Cycle cranking
- PCCNet interface
- (4) Configurable inputs
- (4) Configurable outputs
- Remote emergency stop
- Battle short mode
- Load shed
- Real time clock with exerciser
- Derate

Digital governing (optional)

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 3-phase Line-to-Line sensing
- Configurable torque matching
- Fault current regulation under single or three phase fault conditions

Other data

- Genset model data
- Start attempts, starts, running hours
- Fault history
- RS485 Modbus® interface
- Data logging and fault simulation (requires InPower service tool)
- Total kilowatt hours
- Load profile

Options

- Auxiliary output relays (2)
- 120/240 V, 100 W anti-condensation heater
- Remote annunciator with (3) configurable inputs and (4) configurable outputs
- PMG alternator excitation
- PowerCommand for Windows® remote monitoring software (direct connect)
- AC output analogue meters
- PowerCommand 2.3 and 3.3 control with AmpSentry protection

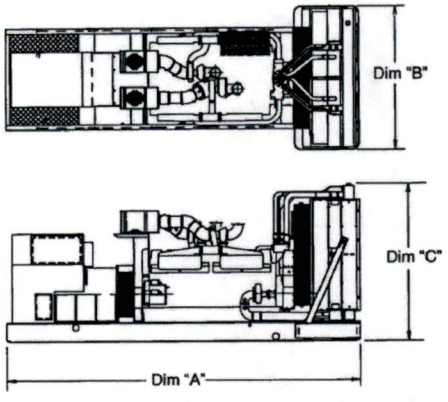
For further detail on PC 2.3 see document S-1569.
For further detail on PC 3.3 see document S-1570.

Emergency Standby Power (ESP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time running Power (LTP):
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):
Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):
Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



This outline drawing if for reference only. See respective model data sheet for specific model outline drawing number.

Do not use for installation design

Model	Dim 'A' mm (in.)	Dim 'B' mm (in.)	Dim 'C' mm (in.)	Set weight dry* kg (lbs)	Set weight wet* kg (lbs)
DFEJ	3864 (152.1)	1524 (60.0)	1812 (71.3)	4098 (9035)	4234 (9335)
DFEK	3864 (152.1)	1524 (60.0)	1812 (71.3)	4325 (9535)	4461 (9835)

*Weights represent a set with standard features. See outline drawings for weights of other configurations.

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Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.		The generator set is available listed to UL 2200, Stationary Engine Generator Assemblies for all 60 Hz low voltage models. The PowerCommand control is Listed to UL 508 - Category NITW7 for U.S. and Canadian usage. Circuit breaker assemblies are UL 489 Listed for 100% continuous operation and also UL 869A Listed Service Equipment.
	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.	**U.S EPA**	Engine certified to Stationary Emergency U.S. EPA New Source Performance Standards, 40 CFR 60 subpart IIII Tier 2 exhaust emission levels. U.S. applications must be applied per this EPA regulation.
	All low voltage models are CSA certified to product class 4215-01.	**International Building Code**	The generator set package is available certified for seismic application in accordance with the following International Building Code: IBC2000, IBC2003, IBC2006, IBC2009 and IBC2012.

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

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S-1582 (08/17)

Generator set data sheet

Model:	**DFEK**
Frequency:	**60 Hz**
Fuel type:	**Diesel**
kW rating:	**500 Standby**
	455 Prime
Emissions level:	**EPA NSPS Stationary Emergency Tier 2**

Exhaust emission data sheet:	**EDS-173**
Exhaust emission compliance sheet:	**EPA-1005**
Sound performance data sheet:	**MSP-177**
Cooling performance data sheet:	**MCP-105**
Prototype test summary data sheet:	**PTS-145**
Standard set-mounted radiator cooling outline:	**0500-3326**
Optional set-mounted radiator cooling outline:	
Optional heat exchanger cooling outline:	
Optional remote radiator cooling outline:	

Fuel consumption	**Standby**				**Prime**				**Continuous**
	kW (kVA)				**kW (kVA)**				**kW (kVA)**
Ratings	500 (625)				455 (569)				
Load	**1/4**	**1/2**	**3/4**	**Full**	**1/4**	**1/2**	**3/4**	**Full**	**Full**
US gph	11.6	18.8	25.7	34.4	10.9	17.6	23.7	30.4	
L/hr	44	71	97	130	41	67	90	115	

Engine	**Standby rating**	**Prime rating**	**Continuous rating**
Engine manufacturer	Cummins Inc.		
Engine model	QSX15-G9		
Configuration	Cast iron with replaceable wet cylinder liners, in-line 6 cylinder		
Aspiration	Turbocharged with air-to-air charge air-cooling		
Gross engine power output, kWm (bhp)	563.0 (755.0)	507.3 (680.0)	
BMEP at set rated load, kPa (psi)	2433.9 (353.0)	2213.2 (321.0)	
Bore, mm (in.)	136.9 (5.39)		
Stroke, mm (in.)	168.9 (6.65)		
Rated speed, rpm	1800		
Piston speed, m/s (ft/min)	10.1 (1995.0)		
Compression ratio	17.0:1		
Lube oil capacity, L (qt)	83.3 (88.0)		
Overspeed limit, rpm	2150 ± 50		
Regenerative power, kW	52.00		

Fuel flow	Standby rating	Prime rating	Continuous rating
Maximum fuel flow, L/hr (US gph)	423.9 (112.0)		
Maximum inlet restriction, mm Hg (in Hg)	127.0 (5.0)		
Maximum return restriction, mm Hg (in Hg)	165.1 (6.5)		

Air			
Combustion air, m^3/min (scfm)	41.6 (1470.0)	38.8 (1370.0)	
Maximum air cleaner restriction, kPa (in H_2O)	6.2 (25.0)		
Alternator cooling air, m^3/min (scfm)	62.0 (1290.0)		

Exhaust			
Exhaust flow at set rated load, m^3/min (cfm)	102.6 (3625.0)	88.7 (3135.0)	
Exhaust temperature, °C (°F)	482.8 (901.0)	466.7 (872.0)	
Maximum back pressure, kPa (in H_2O)	10.2 (41.0)		

Standard set-mounted radiator cooling			
Ambient design, °C (°F)	40 (104)		
Fan load, kW_m (HP)	19 (25.5)		
Coolant capacity (with radiator), L (US gal)	57.9 (15.3)		
Cooling system air flow, m^3/min (scfm)	707.5 (25000.0)		
Total heat rejection, MJ/min (Btu/min)	19.6 (18485.0)	17.7 (16680.0)	
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)		

Optional set-mounted radiator cooling			
Ambient design, °C (°F)	50 (122)		
Fan load, kW_m (HP)	19 (25.5)		
Coolant capacity (with radiator), L (US gal)	57.9 (15.3)		
Cooling system air flow, m^3/min (scfm)	707.5 (25000.0)		
Total heat rejection, MJ/min (Btu/min)	19.6 (18485.0)	17.7 (16680.0)	
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)		

Optional heat exchanger cooling			
Set coolant capacity, L (US Gal.)			
Heat rejected, jacket water circuit, MJ/min (Btu/min)			
Heat rejected, after-cooler circuit, MJ/min (Btu/min)			
Heat rejected, fuel circuit, MJ/min (Btu/min)			
Total heat radiated room, MJ/min (Btu/min)			
Maximum raw water pressure, jacket water circuit, kPa (psi)			
Maximum raw water pressure, after-cooler circuit, kPa (psi)			
Maximum raw water pressure, fuel circuit, kPa (psi)			
Maximum raw water flow, jacket water circuit, L/min (US gal/min)			
Maximum raw water flow, after-cooler circuit, L/min (US gal/min)			
Maximum raw water flow, fuel circuit, L/min (US gal/min)			
Minimum raw water flow at 27 °C (80 °F) inlet temp, jacket water circuit, L/min (US gal/min)			
Minimum raw water flow at 27 °C (80 °F) inlet temp, after-cooler circuit, L/min (US gal/min)			
Minimum raw water flow at 27 °C (80 °F) inlet temp, fuel circuit, L/min (US gal/min)			

Optional heat exchanger cooling (continued)

Raw water delta P at min flow, jacket water circuit, kPa (psi)			
Raw water delta P at min flow, after-cooler circuit, kPa (psi)			
Raw water delta P at min flow, fuel circuit, kPa (psi)			
Maximum jacket water outlet temp, °C (°F)			
Maximum after-cooler inlet temp, °C (°F)			
Maximum after-cooler inlet temp at 25 °C (77 °F) ambient, °C (°F)			

Optional remote radiator cooling[1]

Set coolant capacity, L (US gal)	
Max flow rate at max friction head, jacket water circuit, L/min (US gal/min)	
Max flow rate at max friction head, after-cooler circuit, L/min (US gal/min)	
Heat rejected, jacket water circuit, MJ/min (Btu/min)	
Heat rejected, after-cooler circuit, MJ/min (Btu/min)	
Heat rejected, fuel circuit, MJ/min	
Total heat radiated to room, MJ/min (Btu/min)	
Maximum friction head, jacket water circuit, kPa (psi)	
Maximum friction head, after-cooler circuit, kPa (psi)	
Maximum static head, jacket water circuit, m (ft)	
Maximum static head, after-cooler circuit, m (ft)	
Maximum jacket water outlet temp, °C (°F)	
Maximum after-cooler inlet temp at 25 °C (77 °F) ambient, °C (°F)	
Maximum after-cooler inlet temp, °C (°F)	
Maximum fuel flow, L/hr (US gph)	
Maximum fuel return line restriction, kPa (in Hg)	

Weights[2]

Unit dry weight kgs (lbs)	4325 (9535)
Unit wet weight kgs (lbs)	4461 (9835)

Notes:

[1] For non-standard remote installations contact your local Cummins representative.

[2] Weights represent a set with standard features. See outline drawing for weights of other configurations.

Derating factors

Standby	Genset may be operated at up to 1400 m (4593 ft) and 40°C (104°F) without power deration. For sustained operation above these conditions, derate by 3.1% per 305 m (1000 ft), and 9% per 10°C (9% per 18°F). Genset may be operated at up to 500 m (1640 ft) and 50°C (122°F) without power deration. For sustained operation above these conditions, derate by 3% per 305 m (1000 ft), and 9.5% per 10°C (9% per 18°F).
Prime	Genset may be operated at up to 2250 m (7382 ft) and 40°C (104°F) without power deration. For sustained operation above these conditions, derate by 3.2% per 305 m (1000 ft), and 16.6% per 10°C (16.6% per 18°F). Genset may be operated at up to 1600 m (5249 ft) and 50°C (122°F) without power deration. For sustained operation above these conditions, derate by 3.2% per 305 m (1000 ft), and 16.6% per 10°C (16.6% per 18°F).
Continuous	

Ratings definitions

Emergency Standby Power (ESP):	**Limited-Time Running Power (LTP):**	**Prime Power (PRP):**	**Base Load (Continuous) Power (COP):**
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.	Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

Alternator data

Three phase table[1]		105 °C	105 °C	105 °C	125 °C	125 °C	125 °C	125 °C	125 °C	150 °C	150 °C	150 °C	150 °C
Feature code		B262	B301	B252	B258	B252	B414	B246	B300	B426	B413	B424	B419
Alternator data sheet number		308	307	307	308	307	308	306	306	307	307	305	306
Voltage ranges		110/190 thru 139/240 220/380 thru 277/480	347/600	120/208 thru 139/240 240/416 thru 277/480	110/190 thru 139/240 220/380 thru 277/480	120/208 thru 139/240 240/416 thru 277/480	120/208 thru 139/240 240/416 thru 277/480	277/480	347/600	110/190 thru 139/240 220/380 thru 277/480	120/208 thru 139/240 240/416 thru 277/480	277/480	347/600
Surge kW		514	517	514	514	514	516	515	515	512	514	512	515
Motor starting kVA (at 90% sustained voltage)	Shunt												
	PMG	2429	2208	2208	2429	2208	2429	1896	1896	2208	2208	1749	1896

Full load current - amps at Standby rating	110/190	120/208	110/220	115/230	139/240	220/380	230/400	240/416	255/440	277/480	347/600
	1901	1737	1642	1571	1505	951	903	868	821	753	602

Note:

[1] Single phase power can be taken from a three phase generator set at up to 40% of the generator set nameplate kW rating at unity power factor.

Formulas for calculating full load currents:

Three phase output

$$\frac{\text{kW} \times 1000}{\text{Voltage} \times 1.73 \times 0.8}$$

Single phase output

$$\frac{\text{kW} \times \text{SinglePhaseFactor} \times 1000}{\text{Voltage}}$$

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

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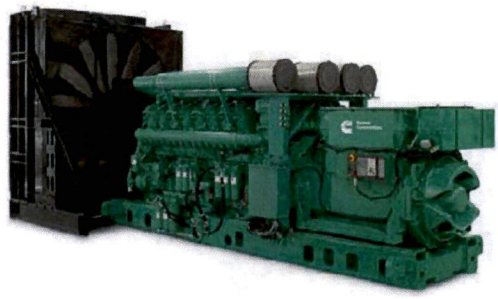
D-3401 (04/20)

Specification Sheet

Diesel Generator Set QSK95 Series Engine



3000 kW - 3250 kW 60 Hz

EPA Tier 2 (NSPS) Emissions Certified with Enhanced Low NO_x

Description

Cummins® commercial generator sets are fully integrated power generation systems providing optimum performance, fuel economy, reliability and versatility for stationary Standby power applications.

Features

Cummins Heavy-duty Engine - Rugged 4-cycle, industrial diesel delivers reliable power, low emissions and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Emissions- EPA Tier 2 (NSPS) Emissions certification standard, with enhanced Low NO_x option available. Contact Cummins for more information and data sheets for this option.

Control System - The PowerCommand® digital control is standard equipment and provides total genset system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, AmpSentry™ protective relay, output metering and auto-shutdown.

Cooling System - Standard and enhanced integral set-mounted radiator systems, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat. Also, optional remote cooled configuration for non-factory supplied cooling systems.

Warranty and Service - Backed by a comprehensive warranty and worldwide distributor network.

NFPA - The generator set accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

	Standby rating	Emissions compliance	Data sheets
Mode	60 Hz kW (kVA)	EPA	60 Hz
C3000 D6e	3000 (3750)	EPA Tier 2	NAD-6462-EN
C3250 D6e	3250 (4063)	EPA Tier 2	NAD-6463-EN

Note: All ratings include radiator fan losses.

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Generator Set Specifications

Governor regulation class	ISO 8528 Part 1 Class G3
Voltage regulation, no load to full load	± 0.5%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
Radio Frequency (RF) emission compliance	47 CFR FCC PART 15 Subpart B (Class A for industrial)

Engine Specifications

Bore	190 mm (7.48 in)
Stroke	210 mm (8.27 in)
Displacement	95.3 litres (5816 in^3)
Configuration	Cast iron, V 16 cylinder
Battery capacity	6 x 1400 amps minimum at ambient temperature of -18 °C (0 °F)
Battery charging alternator	145 amps
Starting voltage	24 volt, negative ground
Fuel system	Cummins modular common rail system
Fuel filter	On engine triple element, 5 micron primary filtration with water separators, 3 micron/2 micron (filter in filter design) secondary filtration.
Fuel transfer pump	Electronic variable speed priming and lift pump
Breather	Cummins impactor breather system
Air cleaner type	Unhoused dry replaceable element
Lube oil filter type(s)	Spin-on combination full flow filter and bypass filters
Standard cooling system	High ambient compact cooling system (ship loose) High ambient cooling system (ship loose)

Alternator Specifications

Design	Brushless, 4 pole, drip proof, revolving field
Stator	Optimal
Rotor	Two bearing, flexible coupling
Insulation system	Class H on low and medium voltage, Class F on high voltage
Standard temperature rise	125 ºC Standby
Exciter type	Optimal
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform Total Harmonic Distortion (THDV)	< 5% no load to full linear load, < 3% for any single harmonic
Telephone Influence Factor (TIF)	< 50 per NEMA MG1-22.43
Telephone Harmonic Factor (THF)	< 3
Anti-condensation heater	1400 watt

Available Voltages

60 Hz Line – Neutral/Line – Line

- 220/380
- 240/416
- 255/440
- 7200/12470
- 277/480
- 347/600
- 2400/4160
- 7620/13200
- 7970/13800

Note: Consult factory for other voltages.

Generator Set Options and Accessories

Engine

- 480 V thermostatically controlled coolant heater for ambient above 4.5 °C (40 °F)
- Heavy duty air cleaner
- Redundant fuel filter
- Air starter
- Redundant electric starting
- Lube oil make up
- Coalescing breather filter

Alternator

- 80 °C rise
- 105 °C rise
- 125 °C rise
- 150 °C rise
- Differential current transformers

Cooling system

- Enhanced high ambient cooling system (ship loose)
- High ambient compact cooling system (ship loose)
- High ambient cooling system (ship loose)
- Remote cooled configuration

Emissions

- EPA Tier 2 Certification
- EPA Tier 2 with Enhanced Low NO_x

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Generator set options and accessories (continued)

Control panel

- Multiple language support
- Ground fault indication
- Remote annunciator panel
- Paralleling and shutdown alarm relay package
- Floor mounted pedestal installed control panel

Generator set

- Battery
- Battery charger
- LV and MV entrance box
- Spring isolators
- Factory witness tests
- IBC, OSHPD, IEEE seismic certification

Warranty

- 3, 5, or 10 years for Standby including parts (labor and travel optional)

Note: Some options may not be available on all models - consult factory for availability.

PowerCommand 3.3 – Control System

An integrated microprocessor based generator set control system providing voltage regulation, engine protection, alternator protection, operator interface and isochronous governing. Refer to document S-1570 for more detailed information on the control.

AmpSentry – Includes integral AmpSentry protection, which provides a full range of alternator protection functions that are matched to the alternator provided.

Power Management – Control function provides battery monitoring and testing features and smart starting control system.

Advanced Control Methodology – Three phase sensing, full wave rectified voltage regulation, with a PWM output for stable operation with all load types.

Communications Interface – Control comes standard with PCCNet and Modbus interface.

Regulation Compliant – Prototype tested: UL, CSA and CE compliant.

Service - InPower™ PC-based service tool available for detailed diagnostics, setup, data logging and fault simulation.

Easily Upgradeable – PowerCommand controls are designed with common control interfaces.

Reliable Design – The control system is designed for reliable operation in harsh environment.

Multi-language Support

Operator Panel Features

Operator/display Functions

- Displays paralleling breaker status
- Provides direct control of the paralleling breaker
- 320 x 240 pixels graphic LED backlight LCD
- Auto, manual, start, stop, fault reset and lamp test/panel lamp switches
- Alpha-numeric display with pushbuttons
- LED lamps indicating genset running, remote start, not in auto, common shutdown, common warning, manual run mode, auto mode and stop

Paralleling Control Functions

- First Start Sensor™ system selects first genset to close to bus
- Phase lock loop synchronizer with voltage matching
- Sync check relay
- Isochronous kW and kVar load sharing
- Load govern control for utility paralleling
- Extended paralleling (base load/peak shave) mode
- Digital power transfer control, for use with a breaker pair to provide open transition, closed transition, ramping closed transition, peaking and base load functions.

Other Control Features

- 150 watt anti-condensation heater
- DC distribution panel
- AC auxiliary distribution panel

Alternator Data

- Line-to-Neutral and Line-to-Line AC volts
- 3-phase AC current
- Frequency
- kW, kVar, power factor kVA (three phase and total)
- Winding temperature
- Bearing temperature

Engine Data

- DC voltage
- Engine speed
- Lube oil pressure and temperature
- Coolant temperature
- Comprehensive FAE data (where applicable)

Other Data

- Genset model data
- Start attempts, starts, running hours, kW hours
- Load profile (operating hours at % load in 5% increments)
- Fault history
- Data logging and fault simulation (requires InPower)
- Air cleaner restriction indication
- Exhaust temperature in each cylinder

Standard Control Functions

Digital Governing

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Standard control functions (continued)

Digital Voltage Regulation

- Integrated digital electronic voltage regulator
- 3-phase, 4-wire Line-to-Line sensing
- Configurable torque matching

AmpSentry AC Protection

- AmpSentry protective relay
- Over current and short circuit shutdown
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shutdown
- Over and under frequency shutdown
- Overload warning with alarm contact
- Reverse power and reverse Var shutdown
- Field overload shutdown

Engine Protection

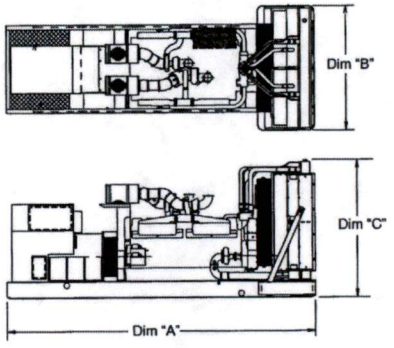
- Battery voltage monitoring, protection and testing
- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown
- Fuel-in-rupture-basin warning or shutdown
- Full authority electronic engine protection

Control Functions

- Time delay start and cool down
- Real time clock for fault and event time stamping
- Exerciser clock and time of day start/stop
- Data logging
- Cycle cranking
- Load shed
- Configurable inputs and outputs (20)
- Remote emergency stop

Ratings Definitions

Emergency Standby Power (ESP):
Applicable for supplying power to varying electrical loads for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.



This outline drawing is for reference only. See PowerSuite library for specific model outline drawing number.

Do not use for installation design

Model	Dim "A"* mm (in.)	Dim "B"* mm (in.)	Dim "C"* mm (in.)	Set weight* dry kg (lbs)	Set weight* wet kg (lbs)
C3000 D6e	7902 (311)	3028 (119)	3663 (144)	29526 (65092)	31194 (68771)
C3250 D6e	7902 (311)	3028 (119)	3663 (144)	29526 (65092)	31194 (68771)

* Weights and dimensions represent a set with standard features and alternator frame P80X.
See outline drawing for weights and dimensions of other configurations.

Codes and Standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.		The generator set is available listed to UL 2200, Stationary Engine Generator Assemblies for all 60 Hz low voltage models. The PowerCommand control is Listed to UL 508 - Category NITW7 for U.S. and Canadian usage.
	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.	**U.S. EPA**	Engine certified to Stationary Emergency U.S. EPA New Source Performance Standards, 40 CFR 60 subpart IIII Tier 2 exhaust emission levels. U.S. applications must be applied per this EPA regulation.
	All models are CSA certified to product class 4215-01.		

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

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NAS-6461 A062L698 (12/21)

Generator Set Data Sheet

Model:	**C3000 D6e**
Frequency:	**60 Hz**
Fuel Type:	**Diesel**
kW Rating:	**3000 Standby**
Emissions level:	**EPA Tier 2 (NSPS) Emissions Certified**

Fuel Consumption	Standby			
	kW (kVA)			
Ratings	3000 (3750)			
Ratings without fan[1]	3075 (3844)			
Load	**1/4**	**1/2**	**3/4**	**Full**
US gph	65	115	171	222
L/hr	248	434	648	839

[1]Ratings for reference with the optional remote radiator cooling configuration. See note 1 under "Alternator data" section.

Engine	Standby rating
Engine model	QSK95-G12
Configuration	Cast iron, Vee, 16 cylinder
Aspiration	Turbocharged and after-cooled
Gross engine power output, kWm (bhp)	3213 (4309)
BMEP at set rated load, kPa (psi)	2248 (326)
Bore, mm (in.)	190.0 (7.48)
Stroke, mm (in.)	210.1 (8.27)
Rated speed, rpm	1800
Piston speed, m/s (ft/min)	12.6 (2480)
Compression ratio	15.1:1
Lube oil capacity, L (qt)	647 (684)
Overspeed limit, rpm	2070
Regenerative power, kW	321

Fuel Flow	
Maximum fuel flow, L/hr (US gph)	1489 (393)
Maximum fuel inlet restriction with clean filter, kPa (in Hg)	16.9 (5)
Maximum fuel return line restriction, kPa (in Hg)	34 (10)
Maximum fuel inlet temperature, °C (°F)	71.1 (160)
Maximum fuel outlet temperature, °C (°F)	92.2 (198)

Air	Standby rating
Combustion air, m^3/min (scfm)	286 (10098)
Maximum air cleaner restriction with clean filter, mm H_2O (in H_2O)	508 (20)
Alternator cooling air, m^3/min (scfm)	255 (9005)

Exhaust

Exhaust flow at set rated load, m^3/min (scfm)	744 (26265)
Exhaust temperature at set rated load, °C (°F)	489 (912)
Maximum back pressure, kPa (in H_2O)	7 (28)

Set-mounted Radiator Cooling	~~High Ambient~~	~~High Ambient Compact~~	Enhanced High Ambient
Ambient design, °C (°F)	48 (118)	41 (106)	50 (122)
Fan load, kWm (HP)	78 (105)	149 (200)	78 (105)
Coolant capacity (with radiator), L (US gal)	1120 (296)	1238 (327)	1155 (305)
Cooling system air flow, m^3/min (scfm)	3135 (110700)	2579 (91083)	3135 (110700)
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)	0.12 (0.5)	0.12 (0.5)

~~Optional Remote Radiator Cooling~~

~~Engine coolant capacity, L (US gal)~~	~~379 (100)~~
~~Max flow rate at max friction head, jacket water circuit, L/min (US gal/min)~~	~~2907 (768)~~
~~Max flow rate at max friction head, after cooler circuit, L/min (US gal/min)~~	~~697 (184)~~
~~Heat rejected, jacket water circuit, MJ/min (Btu/min)~~	~~97.9 (92773)~~
~~Heat rejected, after cooler circuit, MJ/min (Btu/min)~~	~~24.9 (23510)~~
~~Heat rejected, fuel circuit, MJ/min (Btu/min)~~	~~0.51 (481)~~
~~Total heat radiated to room, MJ/min (Btu/min)~~	~~27.5 (26006)~~
~~Maximum friction head, jacket water circuit, kPa (psi)~~	~~83 (12)~~
~~Maximum friction head, after cooler circuit, kPa (psi)~~	~~83 (12)~~
~~Maximum static head above engine crank centerline, jacket water circuit, m (ft)~~	~~18 (60)~~
~~Maximum static head above engine crank centerline, after cooler circuit, m (ft)~~	~~18 (60)~~
~~Maximum jacket water outlet temp, °C (°F)~~	~~110 (230)~~
~~Maximum after cooler inlet temp, °C (°F)~~	~~71.1 (160)~~
~~Maximum after cooler inlet temp at 25 °C (77 °F) ambient, °C (°F)~~	~~46.1 (115)~~

~~**Note:** For non-standard remote installations contact your local Cummins representative.~~

Weights

Unit dry weight kg (lb)	29630 (65186)
Unit wet weight kg (lb)	31494 (69287)

Note: Weights represent a set with standard features and alternator frame P80X. See outline drawing for weights of other configurat

Derating Factors

High Ambient Compact Cooling System: Full genset power available up to 550 m (1804 ft) at ambient temperatures up to 40 °C (104 °F). Above these conditions, derate at 5.9% per 305 m (1000 ft) and 22.2% per 10 °C (18 °F).
High Ambient Cooling System: Full genset power available up to 1023 m (3357 ft) at ambient temperatures up to 40 °C (104 °F). Above these conditions, derate at 6% per 305 m (1000 ft) and 17% per 10 °C (18 °F).
Enhanced High Ambient Cooling System: Full genset power available up to 1041 m (3416 ft) at ambient temperatures up to 40 °C (104 °F) and 714 m (2341 ft) at ambient temperatures up to 50 °C (122 °F). Above these conditions, derate at 6% per 305 m (1000 ft) and 16.5% per 10 °C (18 °F).

Ratings Definitions

Emergency Standby Power (ESP): Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Alternator Data[1]

Voltage	Connection	Temp rise degrees C	Duty	Max surge kVA[2]	Winding number	Alternator data sheet	Feature code
380	Wye, 3-phase	125	Standby	N/A	13	ADS-531	BB05-2
380	Wye, 3-phase	150	Standby	N/A	13	ADS-531	B814-2
416	Wye, 3-phase	125	Standby	15093	12	ADS-532	BB76-2
416	Wye, 3-phase	150	Standby	13283	12	ADS-531	BA53-2
440	Wye, 3-phase	105	Standby	14781	12	ADS-532	B665-2
440	Wye, 3-phase	125	Standby	13024	12	ADS-531	B535-2
440	Wye, 3-phase	150	Standby	13024	12	ADS-531	B813-2
480	Wye, 3-phase	105	Standby	13024	12	ADS-531	B280-2
480	Wye, 3-phase	125	Standby	13024	12	ADS-531	B801-2
600	Wye, 3-phase	105	Standby	12426	7	ADS-531	BB07-2
600	Wye, 3-phase	125	Standby	12426	7	ADS-531	B465-2
600	Wye, 3-phase	150	Standby	12426	7	ADS-531	B451-2
600	Wye, 3-phase	80	Standby	N/A	7	ADS-532	B695-2
4160	Wye, 3-phase	80	Standby	15662	51	ADS-587	B935-2
4160	Wye, 3-phase	105	Standby	9481	51	ADS-545	B937-2
4160	Wye, 3-phase	125	Standby	8752	51	ADS-520	B467-2
4160	Wye, 3-phase	150	Standby	7295	51	ADS-519	B938-2
12.47k	Wye, 3-phase	80	Standby	N/A	8030	ADS-590	B607-2
12.47k	Wye, 3-phase	105	Standby	13438	91	ADS-534	B568-2
12.47k	Wye, 3-phase	125	Standby	13438	91	ADS-534	B609-2
13.2k	Wye, 3-phase	80	Standby	N/A	8030	ADS-590	B807-2
13.2k	Wye, 3-phase	105	Standby	13438	91	ADS-534	B501-2
13.2	Wye, 3-phase	125	Standby	11213	91	ADS-533	B803-2
13.8k	Wye, 3-phase	80	Standby	16688	8029	ADS-589	B610-2
13.8k	Wye, 3-phase	105	Standby	13438	91	ADS-534	B895-2

Notes:

[1]Alternator data is configured for a set with ratings including engine cooling fan losses and standard features at 40 °C ambient temperature. For non-standard configurations, including remote radiator applications, check appropriate alternator data sheets or contact your local Cummins representative.

[2]Maximum rated starting kVA that results in a minimum of 90% of rated sustained voltage during starting.

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

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NAD-6462-EN (12/21)

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SUPPLEMENTAL INFORMATION

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DAQ Use Only

Form SS-PER-007-03: Internal Combustion Engine Worksheet

(Must be submitted with the Minor Source Permit Application or the Authority to Construct—Major Source Application forms)

Please see instructions on page 2 before filling out the form.

☐ Supplemental Information

IDENTIFICATION

1. Source Name: Gen-C	2. Source ID No.: 18218

3. Brief Project Description:

Verizon is proposing to build a new Mobile Switching Center consist of three diesel-fired emergency generators. With this application, Verizon is proposing to construct and operate one Cummins generator rated at 500 killowatt electircal (kWe) and two Cummins generators each rated at 3,000 kWe. Each generator has a diesel fuel storage tank that is considered insignificant activity per County Air Regulation 12.1.2(c)(9).

ENGINE SPECIFICATIONS

4. Engine Manufacturer: Cummins Inc	
5. Engine Power Rating: 4,309 (hp) @ 1800 RPM	
6. Engine Model Number: QSK95-G12	7. Engine Serial Number: J230280443
8. Date of Engine Manufacture: April 2022	
9. Date Engine Ordered: 04/26/2022	10. Date of Installation: Upon Permit Issuance
11. No. Cylinders: 16	12. Displacement (check one): 95.3 ■ liters OR ☐ in^3

13. Check ALL configurations below that apply to this engine: ■ Continuous-duty ■ Emergency

☐ Spark Ignition OR ■ Compression Ignition	☐ Two Cycle OR ■ Four Cycle	☐ Lean Burn OR ☐ Rich Burn

14. Fuel type: ☐ Natural gas ■ Diesel ☐ Propane/LPG ☐ Dual-Fuel ☐ Other (specify):

15. Maximum hours of operation per year: 500

EQUIPMENT SPECIFICATIONS

16. Check ONE option below that best describes the equipment receiving power from the engine:

■ Electric Generator ☐ Fire Pump ☐ Air Compressor ☐ Other (specify):

17. Equipment Manufacturer: Cummins Inc.	
18. Equipment Output Rating: 3000 kW (If not kW, specify unit):	
19. Equipment Model Number: C3000 D6e	20. Equipment Serial Number: 37291536

ENGINE EMISSIONS DATA

21. List the emission data for this unit for particulate matter under 10 microns (PM_{10}), particulate matter under 2.5 microns ($PM_{2.5}$), nitrogen oxides (NOx), sulfur dioxide (SO_2), carbon monoxide (CO), and volatile organic compounds (VOCs). Greenhouse gas (GHG) emissions (calculated in CO_2e) are only required for sources subject to major source New Source Review and/or Title V.

Pollutant	Emissions rate	Units (check one)
$PM_{10}/PM_{2.5}$	0.32	■ g/bhp-hr OR ☐ g/kW-hr
NOx	2.49	■ g/bhp-hr OR ☐ g/kW-hr
SO_2	5.50E-3	■ g/bhp-hr OR ☐ g/kW-hr
CO	2.49	■ g/bhp-hr OR ☐ g/kW-hr
VOC	0.32	■ g/bhp-hr OR ☐ g/kW-hr
GHG		☐ g/bhp-hr OR ☐ g/kW-hr

22. Check ALL sources of emissions data referenced above and note for which pollutant(s):

☐ Manufacturer's Guarantee* Pollutant(s):

☐ Source Test Pollutant(s):

☒ AP-42 (if no other data available) Pollutant(s): PM10/PM2.5, NOx, SO2, CO, VOC

23. Specify the air pollution control methods used with the engine:

All generators will meet RACT requirements by complying with EPA Tier 2 emission standards and using ULSD fuel.

24. **40 CFR Part 60, Subpart IIII:** Is the engine subject to this regulation and/or applicable to the paragraph in this section? ☒ Yes ☐ No

The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in paragraphs (a)(1) through (4) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator. (1) Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is: (i) 2007 or later, for engines that are not fire pump engines; (ii) The model year listed in Table 3 to this subpart or later model year, for fire pump engines; (2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are: (i) Manufactured after April 1, 2006, and are not fire pump engines, or (ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006; (3) Owners and operators of any stationary CI ICE that are modified or reconstructed after July 11, 2005 and any person that modifies or reconstructs any stationary CI ICE after July 11, 2005; (4) The provisions of § 60.4208 of this subpart are applicable to all owners and operators of stationary CI ICE that commence construction after July 11, 2005.

25. **40 CFR Part 60, Subpart JJJJ:** Is the engine subject to this regulation and/or applicable to the paragraph in this section? ☐ Yes ☒ No

The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (6) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator. (1) Manufacturers of stationary SI ICE with a maximum engine power less than or equal to 19 kilowatt (KW) (25 horsepower (HP)) that are manufactured on or after July 1, 2008; (2) Manufacturers of stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) that are gasoline fueled or that are rich burn engines fueled by liquefied petroleum gas (LPG), where the date of manufacture is: (i) On or after July 1, 2008; or (ii) On or after January 1, 2009, for emergency engines; (3) Manufacturers of stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) that are not gasoline fueled and are not rich burn engines fueled by LPG, where the manufacturer participates in the voluntary manufacturer certification program described in this subpart and where the date of manufacture is: (i) On or after July 1, 2007, for engines with a maximum engine power greater than or equal to 500 HP (except lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP),(ii) On or after January 1, 2008, for lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP, (iii) On or after July 1, 2008, for engines with a maximum engine power less than 500 HP, or (iv) On or after January 1, 2009, for emergency engines; (4) Owners and operators of stationary SI ICE that commence construction after June 12, 2006, where the stationary SI ICE are manufactured: (i) On or after July 1, 2007, for engines with a maximum engine power greater than or equal to 500 HP (except lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP),(ii) on or after January 1, 2008, for lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP, (iii) on or after July 1, 2008, for engines with a maximum engine power less than 500 HP, or (iv) on or after January 1, 2009, for emergency engines with a maximum engine power greater than 19 KW (25 HP); (5) Owners and operators of stationary SI ICE that are modified or reconstructed after June 12, 2006, and any person that modifies or reconstructs any stationary SI ICE after June 12, 2006; (6) The provisions of § 60.4236 of this subpart are applicable to all owners and operators of stationary SI ICE that commence construction after June 12, 2006.

26. **40 CFR Part 63, Subpart ZZZZ:** Is the engine subject to this regulation and/or applicable to the paragraph in this section? ☒ Yes ☐ No

You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand; (a) A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition; (b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site; (c) An area source of HAP emissions is a source that is not a major source; (d) If you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable; (e) If you are an owner or operator of a stationary RICE used for national security purposes, you may be eligible to request an exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C; (f) The emergency stationary RICE listed in paragraphs (f)(1) through (3) of this section are not subject to this subpart. The stationary RICE must meet the definition of an emergency stationary RICE in § 63.6675, which includes operating according to the provisions specified in § 63.6640(f); (1) Existing residential emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in § 63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in § 63.6640(f)(4)(ii); (2) Existing commercial emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in § 63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in § 63.6640(f)(4)(ii); (3) Existing institutional emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in § 63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in § 63.6640(f)(4)(ii).

Attach manufacturer's specification sheet(s) for the engine's horsepower and the emissions data certifications provided for the emission rates.

All information above this line is required for this form to be considered complete. Duplicate sheet as needed.

The information below guides you to other forms that may have to accompany this worksheet and general information concerning the emissions data.

- For emission control equipment, use the appropriate **CONTROL EQUIPMENT** form and duplicate as needed. Be sure to indicate the emission unit that the control equipment is affecting.

- For the purpose of determining whether a source needs a Minor Source Permit, DAQ will calculate its potential to emit (PTE) using 8,760 hours of operation for all continuous-duty engines and 500 hours of operation for emergency equipment.

- Emergency equipment for which these units are not the primary power supply, such as emergency generators and emergency fire pumps, will include operations due to testing, maintenance, and emergencies. DAQ will limit the maximum operating hours for testing and maintenance to the limits specified in any applicable NSPS or NESHAP (e.g., 100 hrs/yr).

- Continuous-duty equipment for which these units are the primary power supply will calculate a source's permitted PTE using 8,760 hours per year, unless the emission unit is physically or voluntarily limited.

- Use the Boiler form (SS-PER-007-01) if there is a boiler on-site.

Form Instructions

Before filling out this worksheet, locate the **Supplemental Information** box at the top right.

- If submitting this worksheet with a permit application, leave the box unchecked.
- If submitting this worksheet without a permit application, or in response to a DAQ request for supplemental/requested information, check the box.

1. Provide the source name as it appears on the application. If a permit already exists for this operation, the source name should match the name on the permit.
2. If the source is existing and already has a permit, provide the number as it appears on the permit. Otherwise, enter "New."
3. Provide a brief description of the proposed project as it appears on the permit application. Indicate whether the engine is being proposed as a new emission unit, replacing an existing emission unit, or being modified. If it is being modified or replacing an existing emission unit, list the affected emission unit number in this box.

USE ATTACHMENT IF ADDITIONAL SPACE IS REQUIRED.

4–7. Specify the manufacturer, rating, model number, and serial number of the engine.

8. Specify the manufacture date of the engine.

9. Specify the order date of the engine.

10. Specify the installation date of the engine.

11. Specify the number of cylinders in the engine.

12. Specify the displacement of the engine.

13. Specify all the configurations that apply to the engine.

14. Specify the fuel(s) that will be combusted in the engine.

15. Specify the maximum hours of operation per year. If it is not 8,760 hours, the maximum will be an operational limit in your permit. Emergency units will use 500 hours of operation per year.

16. Specify the equipment receiving power from the engine.

17-20. Specify the manufacturer, rating, model number, and serial number of the equipment that receives power from the engine.

21. Specify the emissions data for the engine for all the pollutants listed. Major source NSR or Title V sources are only required to provide the GHG emission rate. If the emission rate is calculated using AP-42 emission factors, no verification is required.

22. Specify all sources of emissions data, and for which pollutants.

23. Specify the method of air pollution control used with the engine.

24-26. Specify which of the 3 regulations applies to this engine, according to engine type and when construction commenced.

SUPPLEMENTAL INFORMATION

18218_20240131_SUP

DES
DEPARTMENT OF ENVIRONMENT AND SUSTAINABILITY
air quality | desert conservation program | sustainability

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Las Vegas, NV 89118-2231
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Form SS-PER-007-03: Internal Combustion Engine Worksheet

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Please see instructions on page 2 before filling out the form.

☐ Supplemental Information

IDENTIFICATION

1. Source Name: Gen-C	2. Source ID No.: 18218

3. Brief Project Description:

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ENGINE SPECIFICATIONS

4. Engine Manufacturer: Cummins Inc	
5. Engine Power Rating: 4,309 (hp) @ 1800 RPM	
6. Engine Model Number: QSK95-G12	7. Engine Serial Number: J230280443
8. Date of Engine Manufacture: April 2022	
9. Date Engine Ordered: 04/26/2022	10. Date of Installation: Upon Permit Issuance
11. No. Cylinders: 16	12. Displacement (check one): 95.3 ☒ liters OR ☐ in^3

13. Check ALL configurations below that apply to this engine: ☒ Continuous-duty ☒ Emergency

☐ Spark Ignition OR ☒ Compression Ignition	☐ Two Cycle OR ☒ Four Cycle	☐ Lean Burn OR ☐ Rich Burn

14. Fuel type: ☐ Natural gas ☒ Diesel ☐ Propane/LPG ☐ Dual-Fuel ☐ Other (specify):

15. Maximum hours of operation per year: 500

EQUIPMENT SPECIFICATIONS

16. Check ONE option below that best describes the equipment receiving power from the engine:

☒ Electric Generator ☐ Fire Pump ☐ Air Compressor ☐ Other (specify):

17. Equipment Manufacturer: Cummins Inc.	
18. Equipment Output Rating: 3000 kW (If not kW, specify unit):	
19. Equipment Model Number: C3000 D6e	20. Equipment Serial Number: 37291536

ENGINE EMISSIONS DATA

21. List the emission data for this unit for particulate matter under 10 microns (PM_{10}), particulate matter under 2.5 microns ($PM_{2.5}$), nitrogen oxides (NOx), sulfur dioxide (SO_2), carbon monoxide (CO), and volatile organic compounds (VOCs). Greenhouse gas (GHG) emissions (calculated in CO_2e) are only required for sources subject to major source New Source Review and/or Title V.

Pollutant	Emissions rate	Units (check one)
$PM_{10}/PM_{2.5}$	0.32	☒ g/bhp-hr OR ☐ g/kW-hr
NOx	2.49	☒ g/bhp-hr OR ☐ g/kW-hr
SO_2	5.50E-3	☒ g/bhp-hr OR ☐ g/kW-hr
CO	2.49	☒ g/bhp-hr OR ☐ g/kW-hr
VOC	0.32	☒ g/bhp-hr OR ☐ g/kW-hr
GHG		☐ g/bhp-hr OR ☐ g/kW-hr

22. Check ALL sources of emissions data referenced above and note for which pollutant(s):

☐ Manufacturer's Guarantee* Pollutant(s):

☐ Source Test Pollutant(s):

☒ AP-42 (if no other data available) Pollutant(s): PM10/PM2.5, NOx, SO2, CO, VOC

23. Specify the air pollution control methods used with the engine:

All generators will meet RACT requirements by complying with EPA Tier 2 emission standards and using ULSD fuel.

24. **40 CFR Part 60, Subpart IIII:** Is the engine subject to this regulation and/or applicable to the paragraph in this section? ☐ Yes ☐ No

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26. **40 CFR Part 63, Subpart ZZZZ:** Is the engine subject to this regulation and/or applicable to the paragraph in this section? ☐ Yes ☐ No

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USE ATTACHMENT IF ADDITIONAL SPACE IS REQUIRED.

4–7. Specify the manufacturer, rating, model number, and serial number of the engine.

8. Specify the manufacture date of the engine.

9. Specify the order date of the engine.

10. Specify the installation date of the engine.

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SUPPLEMENTAL INFORMATION

18218_20240131_SUP

DES
DEPARTMENT OF ENVIRONMENT AND SUSTAINABILITY
air quality | desert conservation program | sustainability

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Las Vegas, NV 89118-2231
Phone (702) 455-5942
Fax (702) 383-9994

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$PM_{10}/PM_{2.5}$	0.32	☒ g/bhp-hr OR ☐ g/kW-hr
NOx	2.49	☒ g/bhp-hr OR ☐ g/kW-hr
SO_2	5.50E-3	☒ g/bhp-hr OR ☐ g/kW-hr
CO	2.49	☒ g/bhp-hr OR ☐ g/kW-hr
VOC	0.32	☒ g/bhp-hr OR ☐ g/kW-hr
GHG		☐ g/bhp-hr OR ☐ g/kW-hr

22. Check ALL sources of emissions data referenced above and note for which pollutant(s):

☐ Manufacturer's Guarantee* Pollutant(s):

☐ Source Test Pollutant(s):

☒ AP-42 (if no other data available) Pollutant(s): PM10/PM2.5, NOx, SO2, CO, VOC

23. Specify the air pollution control methods used with the engine:

All generators will meet RACT requirements by complying with EPA Tier 2 emission standards and using ULSD fuel.

24. **40 CFR Part 60, Subpart IIII:** Is the engine subject to this regulation and/or applicable to the paragraph in this section? ☐ Yes ☐ No

The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in paragraphs (a)(1) through (4) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator. (1) Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is: (i) 2007 or later, for engines that are not fire pump engines; (ii) The model year listed in Table 3 to this subpart or later model year, for fire pump engines; (2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are: (i) Manufactured after April 1, 2006, and are not fire pump engines, or (ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006; (3) Owners and operators of any stationary CI ICE that are modified or reconstructed after July 11, 2005 and any person that modifies or reconstructs any stationary CI ICE after July 11, 2005; (4) The provisions of § 60.4208 of this subpart are applicable to all owners and operators of stationary CI ICE that commence construction after July 11, 2005.

25. **40 CFR Part 60, Subpart JJJJ:** Is the engine subject to this regulation and/or applicable to the paragraph in this section? ☐ Yes ☐ No

The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (6) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator. (1) Manufacturers of stationary SI ICE with a maximum engine power less than or equal to 19 kilowatt (KW) (25 horsepower (HP)) that are manufactured on or after July 1, 2008; (2) Manufacturers of stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) that are gasoline fueled or that are rich burn engines fueled by liquefied petroleum gas (LPG), where the date of manufacture is: (i) On or after July 1, 2008; or (ii) On or after January 1, 2009, for emergency engines; (3) Manufacturers of stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) that are not gasoline fueled and are not rich burn engines fueled by LPG, where the manufacturer participates in the voluntary manufacturer certification program described in this subpart and where the date of manufacture is: (i) On or after July 1, 2007, for engines with a maximum engine power greater than or equal to 500 HP (except lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP),(ii) On or after January 1, 2008, for lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP, (iii) On or after July 1, 2008, for engines with a maximum engine power less than 500 HP, or (iv) On or after January 1, 2009, for emergency engines; (4) Owners and operators of stationary SI ICE that commence construction after June 12, 2006, where the stationary SI ICE are manufactured: (i) On or after July 1, 2007, for engines with a maximum engine power greater than or equal to 500 HP (except lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP),(ii) on or after January 1, 2008, for lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP, (iii) on or after July 1, 2008, for engines with a maximum engine power less than 500 HP, or (iv) on or after January 1, 2009, for emergency engines with a maximum engine power greater than 19 KW (25 HP); (5) Owners and operators of stationary SI ICE that are modified or reconstructed after June 12, 2006, and any person that modifies or reconstructs any stationary SI ICE after June 12, 2006; (6) The provisions of § 60.4236 of this subpart are applicable to all owners and operators of stationary SI ICE that commence construction after June 12, 2006.

26. **40 CFR Part 63, Subpart ZZZZ:** Is the engine subject to this regulation and/or applicable to the paragraph in this section? ☐ Yes ☐ No

You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand; (a) A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition; (b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site; (c) An area source of HAP emissions is a source that is not a major source; (d) If you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable; (e) If you are an owner or operator of a stationary RICE used for national security purposes, you may be eligible to request an exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C; (f) The emergency stationary RICE listed in paragraphs (f)(1) through (3) of this section are not subject to this subpart. The stationary RICE must meet the definition of an emergency stationary RICE in § 63.6675, which includes operating according to the provisions specified in § 63.6640(f); (1) Existing residential emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in § 63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in § 63.6640(f)(4)(ii); (2) Existing commercial emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in § 63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in § 63.6640(f)(4)(ii); (3) Existing institutional emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in § 63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in § 63.6640(f)(4)(ii).

Attach manufacturer's specification sheet(s) for the engine's horsepower and the emissions data certifications provided for the emission rates.

All information above this line is required for this form to be considered complete. Duplicate sheet as needed.

The information below guides you to other forms that may have to accompany this worksheet and general information concerning the emissions data.

- For emission control equipment, use the appropriate **CONTROL EQUIPMENT** form and duplicate as needed. Be sure to indicate the emission unit that the control equipment is affecting.

- For the purpose of determining whether a source needs a Minor Source Permit, DAQ will calculate its potential to emit (PTE) using 8,760 hours of operation for all continuous-duty engines and 500 hours of operation for emergency equipment.

- Emergency equipment for which these units are not the primary power supply, such as emergency generators and emergency fire pumps, will include operations due to testing, maintenance, and emergencies. DAQ will limit the maximum operating hours for testing and maintenance to the limits specified in any applicable NSPS or NESHAP (e.g., 100 hrs/yr).

- Continuous-duty equipment for which these units are the primary power supply will calculate a source's permitted PTE using 8,760 hours per year, unless the emission unit is physically or voluntarily limited.

- Use the Boiler form (SS-PER-007-01) if there is a boiler on-site.

Form Instructions

Before filling out this worksheet, locate the **Supplemental Information** box at the top right.

- If submitting this worksheet with a permit application, leave the box unchecked.
- If submitting this worksheet without a permit application, or in response to a DAQ request for supplemental/requested information, check the box.

1. Provide the source name as it appears on the application. If a permit already exists for this operation, the source name should match the name on the permit.
2. If the source is existing and already has a permit, provide the number as it appears on the permit. Otherwise, enter "New."
3. Provide a brief description of the proposed project as it appears on the permit application. Indicate whether the engine is being proposed as a new emission unit, replacing an existing emission unit, or being modified. If it is being modified or replacing an existing emission unit, list the affected emission unit number in this box.

USE ATTACHMENT IF ADDITIONAL SPACE IS REQUIRED.

4–7. Specify the manufacturer, rating, model number, and serial number of the engine.

8. Specify the manufacture date of the engine.

9. Specify the order date of the engine.

10. Specify the installation date of the engine.

11. Specify the number of cylinders in the engine.

12. Specify the displacement of the engine.

13. Specify all the configurations that apply to the engine.

14. Specify the fuel(s) that will be combusted in the engine.

15. Specify the maximum hours of operation per year. If it is not 8,760 hours, the maximum will be an operational limit in your permit. Emergency units will use 500 hours of operation per year.

16. Specify the equipment receiving power from the engine.

17-20. Specify the manufacturer, rating, model number, and serial number of the equipment that receives power from the engine.

21. Specify the emissions data for the engine for all the pollutants listed. Major source NSR or Title V sources are only required to provide the GHG emission rate. If the emission rate is calculated using AP-42 emission factors, no verification is required.

22. Specify all sources of emissions data, and for which pollutants.

23. Specify the method of air pollution control used with the engine.

24-26. Specify which of the 3 regulations applies to this engine, according to engine type and when construction commenced.

SUPPLEMENTAL INFORMATION

18218_20240207_SUP

Exhaust Emission Data Sheet
C3000 D6e
60 Hz Diesel Generator Set
EPA Tier 2

Engine Information:

Model:	Cummins Inc. QSK95-G9	Bore:	7.48 in. (190 mm)
Type:	4 Cycle, VEE, 16 cylinder diesel	Stroke:	8.27 in. (210 mm)
Aspiration:	Turbocharged and Aftercooled	Displacement:	5816 cu. in. (95.3 liters)
Compression Ratio:	15.5:1		
Emission Control Device:	Turbocharged and Aftercooled		
Emission Level:	Stationary Emergency		

Performance Data	1/4 Standby	1/2 Standby	3/4 Standby	Full Standby	Full Prime	Full Continuous
Engine BHP @ 1800 RPM (60 Hz)	1077	2155	3232	4309	3963	3616
Fuel Consumption L/Hr (US Gal/Hr)	246 (65)	435 (115)	598 (158)	776 (205)	719 (190)	663 (175)
Exhaust Gas Flow m³/min (CFM)	280 (9901)	442 (15626)	548 (19336)	649 (22925)	618 (21829)	587 (20735)
Exhaust Gas Temperature °C (°F)	338 (641)	364 (687)	383 (721)	442 (828)	422 (792)	404 (759)
Exhaust Emission Data						
HC (Total Unburned Hydrocarbons)	0.30 (109)	0.20 (85)	0.11 (50)	0.07 (33)	0.08 (37)	0.09 (42)
NOx (Oxides of Nitrogen as NO_2)	3.20 (1162)	3.16 (1307)	4.10 (1840)	5.21 (2438)	4.81 (2228)	4.34 (1986)
CO (Carbon Monoxide)	0.58 (212)	0.28 (116)	0.17 (75)	0.21 (99)	0.19 (87)	0.18 (82)
PM (Particulate Matter)	0.19 (61)	0.10 (37)	0.05 (21)	0.03 (13)	0.04 (15)	0.05 (19)
SO_2 (Sulfur Dioxide)	0.006 (1.8)	0.005 (1.8)	0.005 (1.8)	0.004 (1.8)	0.004 (1.8)	0.005 (1.8)
Smoke (FSN)	0.84	0.63	0.45	0.34	0.37	0.42

All values (except smoke) are cited: g/BHP-hr (mg/Nm³ @ 5% O2)

Test Conditions

Steady-state emissions recorded per ISO8178-1 during operation at rated engine speed (+/-2%) and stated constant load (+/-2%) with engine temperatures, pressures and emission rates stabilized.

Fuel Specification:	40-48 Cetane Number, 0.0015 Wt.% Sulfur; Reference ISO8178-5, 40 CFR 86, 1313—98 Type 2-D and ASTM D975 No. 2-D. Fuel Density at 0.85 Kg/L (7.1 lbs/US Gal)
Air Inlet Temperature	25 °C (77 °F)
Fuel Inlet Temperature:	40 °C (104 °F)
Barometric Pressure:	100 kPa (29.53 in Hg)
Humidity:	NOx measurement corrected to 10.7 g/kg (75 grains H_2O/lb) of dry air
Intake Restriction:	Set to 18 in of H_2O as measured from compressor inlet
Exhaust Back Pressure:	Set to 1.5 in Hg
Note:	mg/m³ values are measured dry, corrected to 5% O_2 and normalized to standard temperature and pressure (0°C, 101.325 kPa)

The NOx, HC, CO and PM emission data tabulated here are representative of test data taken from a single engine under the test conditions shown above. Data for the other components are estimated. These data are subjected to instrumentation and engine-to-engine variability. Field emission test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation, fuel specification, test procedures and instrumentation. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may results in elevated emission levels.

Exhaust Emission Data Sheet
500DFEK
60 Hz Diesel Generator Set
EPA NSPS Stationary Emergency

Engine Information:

Model:	Cummins Inc. QSX15-G9 NR 2	Bore:	5.39 in. (137 mm)
Nameplate BHP @ 1800 RPM:	755	Stroke:	6.65 in. (169 mm)
Type:	4 cycle, in-line, 6 cylinder diesel	Displacement:	912 cu. in. (14.9 liters)
Aspiration:	Turbocharged with air-to-air charge air cooling		
Compression Ratio:	17:1		
Emission Control Device:	Turbocharged with charge air-cooled		

Performance Data	1/4 Standby	1/2 Standby	3/4 Standby	Full Standby	Full Prime
Engine HP @ Stated Load (1800 RPM)	202	379	555	732	668
Fuel Consumption (gal/Hr)	11.3	18.7	25.8	34.7	30.6
Exhaust Gas Flow (CFM)	1400	2150	2730	3625	3160
Exhaust Gas Temperature (°F)	745	830	820	900	880
Exhaust Emission Data					
HC (Total Unburned Hydrocarbons)	0.24	0.09	0.07	0.14	0.12
NOx (Oxides of Nitrogen as NO_2)	3.24	3.65	4.64	4.43	4.04
CO (Carbon Monoxide)	0.57	0.34	0.40	0.39	0.36
PM (Particulate Matter)	0.09	0.05	0.05	0.02	0.02
Smoke (Pierburg)	0.52	0.44	0.42	0.21	0.20

All values (except smoke) are cited: g/BHP-hr

Test Methods and Conditions

Steady-state emissions recorded per ISO8178-1 during operation at rated engine speed (+/- 2%) and stated constant load (+/- 2%) with engine temperatures, pressures and emission rated stabilized.

Fuel specification:	40-48 Cetane Number, 0.05 Wt.% max. Sulfur; Reference ISO8178-5, 40CFR86.1313-98 Type 2-D and ASTM D975 No. 2-D.
Air Inlet Temperature:	25 °C (77 °F)
Fuel Inlet Temperature:	40 °C (104 °F)
Barometric Pressure:	100 kPa (29.53 in Hg)
Humidity:	10.7 g/kg (75 grains H_2O/lb) of dry air (required for NOx correction)
Intake Restriction:	Set to maximum allowable limit for clean filter
Exhaust Back Pressure:	Set to maximum allowable limit

Data was taken from a single engine test according to the test methods, fuel specification and reference conditions stated above and is subjected to instrumentation and engine-to-engine variability. Tests conducted with alternate test methods, instrumentation, fuel or reference conditions can yield different results.