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RB INYOKERN DATA CENTER

Application for Small Power Plant Exemption (SPPE)

Inyokern, Kern County, California

Docket Number – 26-SPPE-01

Appendix A Supplement — Section A.4

RB Inyokern Data Center

Backup Generating Facility (UPS) — Description

Submitted in Response to CEC Data Request Set 1, DR PD-2

Docket No. 26-SPPE-01 | Applicant: R&L Capital, Inc.

Supplement to Main Application (TN 269893)

Backup Generating Facility Overview and Regulatory Framework

1.1 SPPE Component Description

For purposes of this document, the emergency backup power facility described herein is referred to as the Backup Generating Facility (BGF). Throughout the Main Application (TN 269893) and this Appendix A.4, this facility is described as the emergency standby generator system providing emergency backup power in conjunction with the Uninterruptible Power Supply (UPS) systems serving the data center critical loads, consistent with the terminology established in Section 1.4 (TN 269893).

The SPPE component of the RB Inyokern Data Center (RBIDC or Project) consists of forty (40) diesel-fired emergency standby generator sets sized to serve the 99 MW facility, designed exclusively to serve on-site critical loads during utility outages and for limited commissioning, testing, and maintenance, as confirmed in Section 1.4 (TN 269893) and Section 6 (TN 269893). The emergency standby generator system does not export electricity to the transmission or distribution grid and does not operate as a merchant generating facility, consistent with the Project's confirmed 99 MW utility interconnection under Southern California Edison (SCE) Method of Service Study MOS174 (March 30, 2026). The California Energy Commission (CEC) has exclusive authority pursuant to Public Resources Code (PRC) §25500 et seq. to certify thermal power plants above the applicable statutory threshold. The SPPE process provides the pathway by which the Commission may grant an exemption from its licensing authority for eligible facilities.

This Appendix A.4 describes emergency standby generator system-specific components and systems only. General data center systems, IT equipment infrastructure, cooling systems, and tenant electrical infrastructure are described in the Main Application (TN 269893) and are identified as non-emergency standby generator system components where referenced herein. Engineering parameters described in this document reflect the conceptual design stage of the Project, as disclosed in Section 3.2 (Items Pending Final Engineering, TN 269893). Final parameters will be confirmed and refined through final engineering and permitting. Any material changes resulting from final engineering will be submitted as a supplement to this Appendix A.4 with a new Transmittal Number assigned at time of submission. The emergency standby generator electrical configuration is depicted at the conceptual level in Appendix L.1 (One-Line

Diagram, TN 269626) and will be confirmed in final engineering consistent with Section 3.2 (TN 269893).

1.2 Applicable Laws, Ordinances, Regulations, and Standards (LORS)

The emergency standby generator system is subject to the following primary LORS, as confirmed in Section 1.9 (TN 269893) and the LORS compliance matrix in Section 1.9.11 (TN 269893):

- **40 C.F.R. Part 60, Subpart IIII** Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (NSPS). The proposed diesel-fired engines are EPA Tier 2-certified base engines equipped with Johnson Matthey CompactSCRT aftertreatment (SCR + DPF + DEF) to achieve Tier 4 Final-equivalent emission levels at stack. Subpart IIII applies to these engines.
- **40 C.F.R. Part 63, Subpart ZZZZ** National Emission Standards for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines. The emergency standby generators are exempt from Subpart ZZZZ pursuant to 40 C.F.R. §63.6590(c)(1) because they comply with 40 C.F.R. Part 60 Subpart IIII emission limits.
- **EKAPCD Regulation II, Rule 210.1** New and Modified Stationary Source Review. The emergency standby generators require an Authority to Construct (ATC) and Permit to Operate (PTO) from the Eastern Kern Air Pollution Control District (EKAPCD) prior to engine installation, consistent with Mitigation Measure MM 4.6-10 (TN 269893). Best Available Control Technology (BACT) has been determined as Tier 2-certified base engines with externally applied Johnson Matthey CompactSCRT aftertreatment achieving Tier 4 Final-equivalent emission levels at stack.
- **NFPA 110** Standard for Emergency and Standby Power Systems, including NFPA 110 TIA 22-1 (effective May 8, 2024). The emergency standby generator system is designed as a Level 1 emergency power supply system. The Tier 2 base engine plus external aftertreatment configuration specifically preserves NFPA 110 Level 1 reliability by avoiding EPA-mandated Diesel Exhaust Fluid-out (DEF-out) inducement shutdowns associated with factory-integrated Tier 4 Final engines, which are prohibited under NFPA 110 TIA 22-1 for Level 1 applications, as confirmed in Section 6.4.5 (TN 269893).
- **CCR Title 17, Section 93115** Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines. Annual testing and maintenance hours are limited to a maximum of fifty (50) hours per engine per calendar year, consistent with the ATCM.
- **40 C.F.R. Part 112** Spill Prevention, Control, and Countermeasure (SPCC) Plan. The aggregate diesel fuel storage capacity of 600,000 gallons exceeds the SPCC threshold of 1,320 gallons. A SPCC Plan will be prepared and implemented prior to facility operations consistent with MM 4.9-1 (TN 269893).

2.0 Generating Capacity and Maximum Operational Load

2.1 Installed Capacity and Unit Configuration

The emergency standby generator system consists of forty (40) Caterpillar 3516E diesel-fired emergency standby generators, each rated at 3 MW (3,000 ekW / 3,750 kVA), providing a total installed nameplate capacity of 120 MW (120,000 ekW), as confirmed in Section 1.4 (TN 269893) and Appendix A.3 (Generator Data and Specifications, TN 269593). The generators are configured in two physically separate generator yards positioned on opposite sides of the main data center building to ensure load distribution and operational redundancy, as confirmed in Section 1.4 (TN 269893):

- **Generator Yard A (West Yard):** 20 units (19 active + 1 redundant standby) — N+1 redundancy per yard
- **Generator Yard B (East Yard):** 20 units (19 active + 1 redundant standby) — N+1 redundancy per yard
- **Campus-Wide Redundancy:** 38 active units + 2 redundant standby units — N+2 redundancy campus-wide

Each generator yard operates as an independent power pool with a shared bus. Under standard emergency operation, each unit operates at no more than 80 percent of its peak rated capacity to ensure reliability and longevity, consistent with the generator manufacturer's recommendations and NFPA 110 Level 1 requirements, as confirmed in Section 1.4 (TN 269893).

2.2 Maximum Operational Load

The Project's maximum operational load under any operating scenario is 99 MW, as defined by the Project's confirmed 99 MW utility interconnection under SCE MOS174 (March 30, 2026), consistent with CEC jurisdictional limits under PRC §25541. The emergency standby generator system installed capacity of 120 MW provides headroom above the 99 MW operational ceiling to maintain N+1 redundancy per yard and N+2 redundancy campus-wide at all times.

Parameter	Value	Reference
Number of Generator Units	40	App. A.3 (TN 269593)
Generator Model	Caterpillar 3516E	App. A.3 (TN 269593)
Unit Rating	3 MW (3,000 ekW / 3,750 kVA)	App. A.3 (TN 269593)
Total Installed Capacity	120 MW (120,000 ekW)	Section 1.4 (TN 269893)
Maximum Operational Load	99 MW	MOS174; Section 1.4 (TN 269893)
Redundancy Configuration	N+1 per yard; N+2 campus-wide	Section 1.4 (TN 269893)

Parameter	Value	Reference
Max Unit Load (Standard Operation)	80% of peak rated capacity	Section 1.4 (TN 269893)
Reliability Standard	Tier III/IV; >99.982% availability	Section 1.2 (TN 269893)
Emergency Backup Power Capacity Required	Up to 99 MW (per MOS174)	MOS174

3.0 Generating Capacity and Power Usage Effectiveness (PUE)

3.1 Facility Energy Load Summary

The Project is designed to achieve a power usage effectiveness (PUE) of approximately 1.41 at full Phase 3 buildout, consistent with industry best-in-class performance for data centers serving high-performance computing (HPC) and artificial intelligence (AI) workloads, as confirmed in Section 1.4 (TN 269893) and Table 4.6-2 (Phased Energy Load and PUE Summary, TN 269893). The 99 MW total facility load is composed of the following load components at full Phase 3 buildout:

- **IT Equipment Load:** approximately 70 MW across six modular data halls, each rated at 10 to 12 MW, scalable to rack densities ranging from 10 kW to 50 kW to support HPC and AI workloads, as confirmed in Section 1.4 (TN 269893)
- **Mechanical Overhead Load:** cooling systems including cooling towers, chillers, chilled water pumps, and cooling distribution units, as confirmed in Section 1.4.4 (TN 269893)
- **Electrical Overhead Load:** UPS systems, power distribution units, lighting, and ancillary facility systems
- **Total Non-IT Overhead Load:** approximately 29 MW at full Phase 3 buildout, as confirmed in Table 4.6-2 (TN 269893)

The PUE of approximately 1.41 is calculated as total facility power divided by IT equipment load (99 MW / 70 MW ≈ 1.41), consistent with ISO/IEC 30134-2:2026 PUE measurement methodology and the monitoring and reporting requirements of Mitigation Measures MM 4.6-1, MM 4.6-2, and MM 4.6-3 (TN 269893). Phase 3 PUE of 1.41 reflects the full buildout configuration including 5 MW of additional non-IT infrastructure loads that come fully online at campus full buildout, as confirmed in Section 4.6.5 (TN 269893).

Parameter	Phase 1	Phase 2	Phase 3 (Full)	Reference
IT Load (MW)	~35	~70	~70	Table 4.6-2 (TN 269893)
Non-IT Overhead (MW)	~14	~24	~29	Table 4.6-2 (TN 269893)
Total Facility Load (MW)	~49	~94	~99	Table 4.6-2 (TN 269893)

Parameter	Phase 1	Phase 2	Phase 3 (Full)	Reference
Design PUE	~1.40	~1.34	~1.41	Table 4.6-2 (TN 269893)
Emergency Backup Capacity Required (MW)	~49	~94	~99	MOS174

4.0 Emergency Backup Power Electrical System Design

This section describes emergency standby generator system electrical components only. General data center electrical distribution systems, IT equipment power systems, and tenant electrical infrastructure are described in Section 4.6 (TN 269893) and are not emergency standby generator system components. Final electrical engineering specifications, ATS ratings, sequencing logic, and generator loading parameters are subject to confirmation in final engineering consistent with Section 3.2 (TN 269893) and will be reflected in the one-line diagram (Appendix L.1, TN 269626) as updated during final engineering.

4.1 Utility Interconnection and Normal Power Supply

Under normal operating conditions, the Project receives power from SCE's 115 kV subtransmission system via two SCE-constructed 115 kV overhead subtransmission lines (Route 1 and Route 2) terminating at the customer-owned substation located on APN 084-010-48 south of SR-178, as confirmed in Section 2.0 (TN 269893) and MOS174. The customer-owned substation steps down voltage from 115 kV to 34.5 kV using two 60/80/100 MVA power transformers configured for 2N utility redundancy, as confirmed in Section 1.4.7 (TN 269893), Section 4.6.5 (TN 269893), and Appendix L.1 (One-Line Diagram, TN 269626).

Each transformer is equipped with ONAN/ONAF/ONAF cooling and ±10 percent load tap changer (LTC) control on independent line positions, allowing voltage regulation and stable operation under varying load and system conditions, as confirmed in Section 2.3 (TN 269893). Transformer protection is provided by SEL-487B digital relays providing differential protection, thermal monitoring, and fault isolation, as confirmed in Section 2.3 (TN 269893).

On the medium-voltage side, the two step-down transformers feed a customer-owned 34.5 kV ring bus through interconnected switchgear sections and sectionalizing breakers with dual MV switchgear lineups (SWGR-1A/B and SWGR-2A/B) distributing power to suite transformers and UPS lineups, as confirmed in Section 4.6.5 (TN 269893). The ring bus configuration allows sections of the bus or switchgear to be taken offline for maintenance while maintaining service continuity to facility loads. The 34.5 kV medium-voltage distribution feeds the dual campus loops via underground duct banks beneath the access road, consistent with Section 2.0 (TN 269893). Line and feeder protection is provided by SEL-411L digital relays for line differential and distance protection and SEL-787 relays for feeder and transformer backup protection, with protective zones fiber-interconnected to support rapid coordinated fault clearing, as confirmed in Section 2.3 (TN 269893). Bus protection is provided through a zone interlock scheme with trip redundancy. Design voltage drop from the 115 kV point of interconnection to the UPS input bus is less than 3 percent under normal operating conditions, consistent with Appendix L.1 (TN 269626). The SCE 115 kV subtransmission conductors serving the project are rated at 878 amperes summer normal and 1,124 amperes emergency, consistent with MOS174 and Section 2.0 (TN 269893). The load tap changers on the 34.5 kV side operate in 32 steps within the ±10 percent range, as confirmed in Section 2.3 (TN 269893).

An SCE-owned ring bus substation adjacent to the customer-owned substation provides the utility-side interface between SCE's 115 kV subtransmission system and the customer substation, with an approximate footprint of 167 feet 4 inches by 138 feet, consistent with MOS174, as confirmed in Section 2.3 (TN 269893). Under normal utility service the emergency standby generators are in standby mode and do not supply power to facility loads. Four generator step-up transformers (13.8 kV to 34.5 kV) are provided in a redundant configuration within the right-of-way between the SCE yard and the main building, stepping the emergency standby generator output voltage up to the campus 34.5 kV medium-voltage bus for distribution to facility critical loads during emergency backup power operation, consistent with Section 4.6 (TN 269893) and Appendix L.1 (TN 269626). Final step-up transformer specifications and configuration will be confirmed in final engineering consistent with Section 3.2 (TN 269893). The electrical system design includes reserved protection bays and controls interface points for future battery energy storage system (BESS) and microgrid integration, consistent with the Project's Environmental Sustainability Plan (Appendix O.1, TN 269666) and long-term renewable integration objectives.

4.2 Automatic Transfer and Load Transfer System

The emergency backup power transfer system is designed to detect utility supply interruptions and initiate automatic transfer to emergency generator power within the timeframes required by NFPA 110 Level 1 for life-safety and critical data center loads, as confirmed in Section 4.6 (TN 269893). The transfer switching system is specific to the emergency standby generator system and is independent of IT equipment power switching and UPS bypass switching described in Section 5.0 of this document.

Upon detection of a utility supply interruption, the emergency backup power control system initiates the following sequence consistent with Section 4.6 (TN 269893) and Section 6 (TN 269893):

- Utility interruption detected by transfer switches and Building Automation System (BAS) monitoring
- Emergency standby generator start signals issued simultaneously to all required units in both Generator Yard A and Generator Yard B
- Generators reach rated voltage and frequency within NFPA 110 Level 1 required start time
- Automatic transfer switches (ATS) transfer critical electrical loads from utility source to emergency generator source

- UPS systems provide instantaneous bridging power during the transfer interval as described in Section 5.0
- Generator loading proceeds in a controlled sequence to prevent overloading individual units during startup

Upon restoration of utility power, the transfer system executes a controlled retransfer sequence returning loads to utility source and returning generators to standby mode with appropriate cool-down periods before shutdown. The design target for total transfer time from utility interruption detection to synchronized emergency generator load pickup is not to exceed 15 minutes, consistent with the UPS battery autonomy of 15 minutes per side described in Section 5.0 of this document. Automatic start and transfer sequencing is controlled via SEL-2414 relay logic integrated with generator PLC controllers, consistent with Section 4.6 (TN 269893). Final ATS specifications, sequencing timing, and generator loading sequence details will be confirmed in final engineering consistent with Section 3.2 (TN 269893).

4.3 Redundancy Architecture and Load-Shed Logic

The emergency standby generator system redundancy architecture provides N+1 redundancy within each generator yard and N+2 redundancy across the campus, ensuring that the failure of any single generator unit does not interrupt power to facility critical loads, as confirmed in Section 1.4 (TN 269893). Each generator yard operates as an independent power pool with a shared bus, allowing any active unit to supply power to any connected load within that yard's served zone. The N+1 configuration within each yard means that one unit in each yard is maintained in hot standby ready to assume load if an active unit fails.

Load-shed logic implemented in the emergency backup power control system prioritizes critical data center IT loads over non-critical facility loads in the event of a generator capacity constraint scenario. Load priority tiers are established in order of criticality consistent with Tier III/IV reliability requirements, as follows:

- **Priority 1 —** Critical IT load (servers, network equipment, storage systems in active data halls)
- **Priority 2 —** Critical cooling systems (chilled water plants, cooling towers, data hall HVAC serving active IT equipment)
- **Priority 3 —** Critical electrical support systems (UPS systems, power distribution, fire suppression controls, life-safety systems)
- **Priority 4 —** Non-critical facility loads (office areas, exterior lighting, non-critical HVAC)

Final load-shed logic programming, load priority assignments, and shedding thresholds will be confirmed in final engineering and coordination with the data center controls vendor consistent with Section 3.2 (TN 269893).

4.4 Emergency Standby Generator One-Line Diagram

The emergency standby generator one-line diagram is provided in Appendix L.1 (One-Line Diagram, TN 269626), showing the electrical interconnection between the emergency standby generator units, the 34.5 kV medium-voltage ring bus, the customer-owned substation step-down transformers, and the facility critical electrical loads at the conceptual design stage. Final emergency standby generator electrical configuration, including the one-line diagram, will be confirmed in final engineering consistent with Section 3.2 (TN 269893).

5.0 Uninterruptible Power Supply (UPS) System — Emergency Backup Power Interface

This section describes only the interface between the UPS system and the emergency standby generator system. IT equipment UPS functions, rack-level power protection, and data center UPS systems serving IT loads are not emergency standby generator system components and are not described in this document.

5.1 UPS Function and Emergency Backup Power Interface

Each data hall is served by a redundant Uninterruptible Power Supply (UPS) system providing instantaneous protection from utility supply interruptions during the interval between utility outage detection and completion of emergency standby generator startup and load transfer, as confirmed in Section 1.4.2 (TN 269893). The UPS system serves as the bridging power source during the emergency backup power transfer interval, maintaining continuous power to critical IT loads while the emergency standby generators start and reach rated output. The UPS plant on each side of the campus consists of eleven (11) UPS modules rated at 6 MVA each in an N+1 configuration, providing a minimum of 15 minutes of battery autonomy at full critical load per side, sufficient to bridge the emergency standby generator start and transfer interval, consistent with Section 4.6 (TN 269893) and Appendix L.1 (TN 269626). Dual independent battery strings (A/B) are provided for each UPS module to ensure concurrent maintainability consistent with Tier III design criteria. Suite-level static transfer switches (STS) provide A/B branch transfer without downtime. The UPS systems interface with the emergency standby generator system through the facility's redundant critical electrical lineups, which connect the UPS output to the automatic transfer switch infrastructure described in Section 4.2.

5.2 UPS Configuration at Emergency Backup Power Interface

IT equipment is configured with dual power cords connected to separate critical electrical lineups designed to share load under normal conditions and automatically transfer the entire load to a single source if one lineup becomes unavailable, as confirmed in Section 1.4.2 (TN 269893). Electrical loads on each redundant critical lineup are continuously monitored through the Building Automation System (BAS). An alarm activates at 90 percent of nominal operating capacity to prompt corrective action before load transfer is required, as confirmed in Section

1.4.2 (TN 269893). This monitoring threshold ensures that available emergency backup power capacity is not exceeded during emergency operation.

Final UPS system specifications, battery runtime capacity, UPS topology, and specific equipment selections are subject to confirmation in final engineering consistent with Section 3.2 (TN 269893). UPS specifications do not affect the emergency standby generator capacity, transfer switching, or redundancy architecture described in this document.

6.0 Generator System Description

6.1 Engine Type and Specifications

The emergency standby generators are Caterpillar 3516E diesel-fired emergency standby generator sets, each rated at 3 MW (3,000 ekW / 3,750 kVA) at 0.8 power factor, as confirmed in Appendix A.3 (Generator Data and Specifications, TN 269593). The Caterpillar 3516E is a four-stroke, turbocharged, and aftercooled diesel engine with electronic fuel injection, rated at 4,023 horsepower (3,000 kW) at 1,800 RPM for emergency standby applications. The engine is EPA Tier 2-certified for Emergency Stationary Applications under 40 C.F.R. Part 60, Subpart IIII.

Specification	Value	Reference
Generator Model	Caterpillar 3516E	App. A.3 (TN 269593)
Engine Type	4-stroke, turbocharged, aftercooled diesel	App. A.3 (TN 269593)
EPA Certification	Tier 2 — Emergency Stationary Applications	App. A.3 (TN 269593)
Rated Power Output (Standby)	3,000 ekW (3,750 kVA) at 0.8 PF	App. A.3 (TN 269593)
Engine Speed	1,800 RPM	App. A.3 (TN 269593)
Engine Horsepower	4,023 horsepower (3,000 kW)	App. A.3 (TN 269593)
Applicable NSPS	40 C.F.R. Part 60, Subpart IIII	Section 1.9 (TN 269893)
NESHAP Status	Exempt per 40 C.F.R. §63.6590(c)(1)	Section 1.9 (TN 269893)
NFPA 110 Classification	Level 1 Emergency Power Supply System	Section 6.4.5 (TN 269893)

6.2 Aftertreatment System — Johnson Matthey CompactSCRT

All 40 emergency standby generator units are equipped with externally applied Johnson Matthey CompactSCRT aftertreatment systems consisting of Selective Catalytic Reduction (SCR), Diesel Exhaust Fluid (DEF) storage and dosing systems, and Diesel Particulate Filters (DPF), achieving Tier 4 Final-equivalent emission levels at stack, as confirmed in Section 1.4 (TN 269893), Section 4.3 (TN 269893), and Appendix A.3 (TN 269593). The externally applied aftertreatment configuration is required for NFPA 110 Level 1 compliance, as factory-integrated

Tier 4 Final engines are subject to EPA-mandated DEF-out inducement shutdowns that would interrupt emergency backup power, which is prohibited under NFPA 110 TIA 22-1 (effective May 8, 2024) for Level 1 emergency power supply systems, as confirmed in Section 6.4.5 (TN 269893).

Key aftertreatment performance parameters, as confirmed in the Johnson Matthey CompactSCRT General Arrangement Drawing (Drawing No. 202-C0039989, Revision B, Appendix A.3, TN 269593), include:

- **NOx Reduction Efficiency:** 92.6 percent at rated load, achieving Tier 4 Final-equivalent stack NOx emission levels
- **PM Reduction Efficiency:** 85 percent at rated load through diesel particulate filter (DPF) capture
- **Reagent Injection Permissive Threshold:** 575°F exhaust gas temperature (urea injection initiates upon reaching permissive threshold)
- **Full Load Exhaust Gas Temperature:** approximately 903°F (well above permissive threshold at rated load)
- **SCR Warm-Up Period:** approximately 7 minutes at 100 percent load to approximately 21 minutes at lower load points. Engines are assumed to emit at uncontrolled engine-out emission rates (without SCR and DPF reduction) during the warm-up period in all emissions modeling, as confirmed in the AQIA (Appendix F.1, TN 269606) and consistent with the Statement of Intended EKAPCD Permit Conditions submitted concurrently with this supplement

6.3 Generator Enclosures and Physical Configuration

Each generator package is installed within a compact weatherproof enclosure designed for outdoor installation. Each enclosure incorporates the following emergency standby generator system components, as confirmed in Section 1.4 (TN 269893) and Appendix A.3 (TN 269593):

- Generator set and associated engine-mounted components
- SCR system and catalyst module (externally applied Johnson Matthey CompactSCRT)
- DEF storage tank and dosing system within the enclosure
- Diesel Particulate Filter (DPF) module
- Exhaust system including stack with appropriate discharge height
- Engine-mounted day tank with fuel supply connections to centralized fuel storage
- Generator control panel with automatic start, monitoring, and alarm functions
- Sound attenuation consistent with the noise analysis (Appendix G.1, TN 269607) and the noise levels evaluated in Section 4.13 (TN 269893)

All generator enclosures are installed within secondary containment basins sized to mitigate potential environmental impacts in the event of fuel or fluid leakage, as confirmed in Section 1.4 (TN 269893) and consistent with SPCC requirements under 40 C.F.R. Part 112. Final enclosure dimensions, stack heights, sound attenuation specifications, and secondary containment basin sizing will be confirmed in final engineering consistent with Section 3.2 (TN 269893).

6.4 Fuel System

The emergency standby generator fuel system consists of engine-mounted day tanks connected to six centralized 100,000-gallon diesel fuel storage tanks (600,000-gallon aggregate capacity), providing sufficient storage to sustain 24 to 72 hours of continuous emergency operation at the facility's full design load, as confirmed in Section 1.4.3 (TN 269893).

6.4.1 Primary Fuel

The emergency standby generators are designed to operate on renewable diesel (R99 or R100) as the preferred primary fuel when commercially available, consistent with air quality and emissions reduction objectives and the Project's Environmental Sustainability Plan (Appendix O.1, TN 269666), as confirmed in Section 1.4.3 (TN 269893). Ultra-low sulfur diesel (ULSD, maximum 15 ppm sulfur) will be used as an alternative when renewable diesel is not readily accessible. Renewable diesel provides an estimated 75 percent reduction in lifecycle greenhouse gas emissions compared to conventional petroleum diesel, as confirmed in Appendix O.1 (TN 269666). The Caterpillar 3516E is factory-certified for operation on renewable diesel fuels.

6.4.2 Fuel Storage

Six 100,000-gallon diesel fuel storage tanks (600,000-gallon aggregate) will be double-walled with integrated leak detection systems or installed within secondary containment structures consistent with 40 C.F.R. Part 112 (SPCC) and CCR Title 23 §2630 et seq. (AST/UST regulations), as confirmed in Section 1.4.3 (TN 269893). The Applicant has requested written approval from the Kern County Fire Marshal for the proposed aggregate fuel storage capacity under Kern County Code §18.80.030(T), which requires Fire Marshal approval for flammable and combustible liquid storage in excess of 12,000 gallons per tank in the M-2 Zoning District.

6.4.3 DEF Storage and Supply

Diesel Exhaust Fluid (DEF) is required for the Johnson Matthey CompactSCRT SCR aftertreatment system on each generator unit. Each generator enclosure includes a DEF storage tank sized for the expected operational duration consistent with the engine's DEF consumption rate. DEF is refilled from drums, totes, or bulk tanker truck deliveries, as confirmed in Section 1.4.3 (TN 269893). DEF storage and handling are addressed in the Hazardous Materials Business Plan (HMBP) and Hazardous Materials Inventory Management Plan (MM 4.9-3, TN 269893).

6.4.4 SPCC Plan

A Spill Prevention, Control, and Countermeasure (SPCC) Plan will be prepared and implemented prior to facility operations consistent with 40 C.F.R. Part 112 and MM 4.9-1 (TN 269893). The SPCC Plan will address fuel storage, handling, spill prevention, secondary containment, integrity testing, employee training, and PE certification requirements for the aggregate 600,000-gallon fuel storage capacity.

6.5 Operating Load Range and Performance

Under standard emergency operation, emergency standby generators operate at no more than 80 percent of peak rated capacity per unit to ensure reliability and longevity, as confirmed in Section 1.4 (TN 269893). The installed capacity of 120 MW (40 units × 3 MW) provides capacity above the 99 MW maximum operational load while maintaining N+1 redundancy within each generator yard and N+2 redundancy campus-wide, with one unit per yard maintained in hot standby. The generators are capable of operating across a range of load points from low load (approximately 10 percent of rated capacity) to rated standby capacity (100 percent). Final per-unit loading under emergency operating conditions will be confirmed in final engineering consistent with Section 3.2 (Items Pending Final Engineering, TN 269893). Emissions at each load point are evaluated in the AQIA (Appendix F.1, TN 269606) including SCR warm-up period emissions at each load point, as confirmed in Section 4.3 (TN 269893).

6.6 Warm-Up and Cool-Down Sequences

Upon receiving a start signal, each emergency standby generator unit executes the following startup sequence, as confirmed in Section 4.6 (TN 269893) and the AQIA (Appendix F.1, TN 269606):

- Engine cranking and start — oil pressure and coolant temperature monitoring during startup
- Engine warm-up at no-load or low-load — oil and coolant temperatures reach operating range
- Exhaust gas temperature rise — exhaust temperature rises toward SCR reagent injection permissive threshold of 575°F
- DEF injection initiation — urea injection commences upon reaching 575°F permissive threshold; SCR catalyst becomes active
- Generator loading — generator accepts load transfer upon reaching rated voltage, frequency, and SCR operating temperature

Warm-up periods prior to SCR permissive threshold range from approximately 7 minutes at 100 percent load to approximately 21 minutes at lower load points, as confirmed in the AQIA (Appendix F.1, TN 269606). During the warm-up period, engines emit at uncontrolled engine-out emission rates, which are fully accounted for in the AQIA daily emissions calculations. Upon completion of emergency operation or testing, each generator unit executes a controlled cool-down sequence at reduced or no load prior to shutdown to allow engine temperatures to stabilize and protect engine and aftertreatment components. Final warm-up and cool-down timing parameters and control logic will be confirmed in final engineering consistent with Section 3.2 (TN 269893).

6.7 Testing and Maintenance Protocol

Emergency standby generator testing and maintenance operations are subject to the following protocol, consistent with NFPA 110 Level 1 requirements and the testing parameters assumed

in the AQIA (Appendix F.1, TN 269606), as confirmed in Section 4.3 (TN 269893) and Section 4.6.5.5 (TN 269893):

- **Testing Protocol:** Monthly sequential single-engine testing — one engine tested at a time in sequential rotation across all 40 units
- **Concurrent Testing Limit:** One (1) engine operating for testing at any given time, with a maximum number of engines tested per calendar day consistent with the daily emissions calculations in the AQIA (Appendix F.1, TN 269606) and enforceable permit conditions to be established through EKAPCD Rule 210.1 permitting consistent with the Statement of Intended EKAPCD Permit Conditions submitted concurrently
- **Testing Hours Window:** All testing and maintenance operations restricted to 7:00 AM to 5:00 PM daily, as modeled in the AQIA (Appendix F.1, TN 269606)
- **Annual Testing Hours Limit:** Maximum 50 hours per engine per calendar year for testing and maintenance operations, consistent with CCR Title 17, Section 93115 ATCM requirements
- **Emergency Operation Hours:** Emergency operation during genuine utility outages is not subject to the testing hours window or annual testing hours limit and is governed by the 200-hour per year emergency operation exemption under EKAPCD Rule 210.1

The Applicant is not proposing a fixed test schedule specifying hours versus load points. Testing will be conducted based upon the Applicant's operational judgment considering manufacturer's recommendations, staff availability, and operational necessity, as confirmed in Section 4.3 (TN 269893). Enforceable testing parameters will be established through the EKAPCD ATC and PTO permitting process under Rule 210.1 consistent with MM 4.6-10 (TN 269893).

6.8 Noise Performance

Operational noise from the emergency standby generators is evaluated in the Noise Analysis (Appendix G.1, TN 269607) and Section 4.13 (TN 269893). Under the conservative worst-case scenario modeled in the Noise Analysis, assuming simultaneous operation of all 40 generators 24 hours per day, operational noise levels range from 50 to 58 dBA Leq and 56 to 64 dB Ldn at analyzed receiver locations R-1 through R-8, as confirmed in Table 4.13-3 (Predicted Project-

Related Operational Noise Levels, TN 269893). These levels do not exceed the Kern County exterior noise standard of 65 dB Ldn at off-site noise-sensitive receptors and do not exceed existing ambient noise levels, as confirmed in Section 4.13 (TN 269893). Supplemental noise analyses evaluating normal operating mode (all mechanical equipment, zero generators running) and testing mode (one generator operating in the southwest generator yard plus all mechanical equipment) are provided in the supplemental noise analysis submitted as a formal supplement to Appendix G.1 (TN 269607) with a new Transmittal Number assigned at time of submission.

6.9 Generator Cooling System

Each emergency standby generator is cooled by an integral, engine-mounted radiator with an engine-driven cooling fan in a closed-loop jacket-water configuration, as confirmed in Appendix A.3 (Generator Data and Specifications, TN 269593). The generator cooling system is self-contained within each generator package and is independent of the data center mechanical cooling systems (chilled-water plant, cooling towers, and air-handling units) described in Section 4.6.5 (TN 269893); the Backup Generating Facility does not connect to, or draw cooling capacity from, the data center cooling infrastructure.

The Caterpillar 3516E cooling system is rated for operation in ambient temperatures up to 122°F (50°C), as confirmed in Appendix A.3 (TN 269593), which envelopes the Inyokern site design condition of approximately 107°F dry bulb identified in Section 4.6.5 (TN 269893). Total engine and radiator coolant capacity is approximately 114.7 gallons per unit as a one-time fill, as confirmed in Appendix A.3 (TN 269593). Final radiator selection, enclosure ventilation provisions, and coolant specifications will be confirmed in final engineering consistent with Section 3.2 (Items Pending Final Engineering, TN 269893).

7.0 Fuel Supply, Availability, and Service Life

7.1 Fuel Supply and Delivery

Diesel fuel (renewable diesel or ULSD) will be delivered to the project site by licensed fuel haulers via SR-178 and US-395, as confirmed in Section 1.4.3 (TN 269893). Primary fuel offloading and secondary containment are provided within the designated fuel storage area on the project site. Fuel delivery frequency will be determined by operational demand and emergency storage replenishment requirements, with priority given to maintaining the minimum 24 to 72-hour emergency operating reserve at all times.

7.2 Fuel Availability

Renewable diesel (R99/R100) is commercially available from multiple regional distributors in the Southern California and Central Valley markets. The Caterpillar 3516E is factory-certified for operation on renewable diesel fuels meeting ASTM D975 or equivalent specifications. ULSD meeting the 15 ppm maximum sulfur specification is widely available from commercial fuel distributors throughout the region. No material fuel supply constraints are anticipated for the life of the facility, as confirmed in Section 4.6 (TN 269893).

7.3 Anticipated Service Life and Reliability

The emergency standby generator system is designed to achieve greater than 99.982 percent availability at the critical load, consistent with Tier III/IV reliability design criteria, as confirmed in Section 1.2 (TN 269893). The Caterpillar 3516E is a proven commercial generator platform consistent with the anticipated operational life of the data center facility, as confirmed in Section 4.6 (TN 269893).

8.0 BGF Water Supply and Use

The emergency standby generators are air-cooled via integral engine-mounted radiators (Section 6.9) and consume no continuous process water in operation. Water attributable solely to the Backup Generating Facility is limited to a one-time jacket-water coolant fill of approximately 114.7 gallons per unit (Appendix A.3, TN 269593) and incidental maintenance use. Diesel Exhaust Fluid, a urea-based aftertreatment reagent, is delivered as a consumable and is addressed under Section 9.0 (Hazardous Materials Management); it is not drawn from the facility potable or process water supply.

The Project's operational water demand, as identified by the Inyokern Community Services District and summarized in Section 4.10 (TN 269893), is approximately 40,430 gallons per day average, of which cooling-tower makeup for the data center mechanical plant is the largest component at approximately 28,500 gallons per day, with potable domestic use at approximately 1,900 gallons per day and irrigation at approximately 500 gallons per day. None of this operational water demand is attributable to the Backup Generating Facility. Accordingly, the BGF imposes no incremental demand on the CSD water allocation beyond the de minimis quantities identified above. Final coolant and reagent volumes will be confirmed in final engineering consistent with Section 3.2 (TN 269893).

9.0 Hazardous Materials Management

Hazardous materials associated with the Backup Generating Facility are limited to those required for emergency standby generator operation, fueling, and aftertreatment, and are typical of large standby diesel installations. These materials are managed in accordance with the Hazardous Materials Business Plan (HMBP), the Spill Prevention, Control, and Countermeasure (SPCC) Plan, applicable fire code, and hazardous-waste requirements, consistent with Section 4.9 (TN 269893) and Mitigation Measures MM 4.9-1 and MM 4.9-3 (TN 269893).

The principal BGF hazardous materials are: diesel fuel (renewable diesel or ultra-low sulfur diesel) stored in six 100,000-gallon aboveground tanks (600,000-gallon aggregate) and engine-mounted day tanks (Section 6.4); Diesel Exhaust Fluid (a urea-based aftertreatment reagent) stored at each generator enclosure (Section 6.4.3); and engine lubricating oil and coolant contained within each generator package.

Storage and containment measures for these materials, as confirmed in Section 4.9 (TN 269893), include UL-2085 double-wall aboveground storage tanks with integrated leak detection, secondary containment basins beneath the generator enclosures and fuel storage area (Section 6.3, Section 6.4.2), and the SPCC Plan prepared for the aggregate 600,000-gallon diesel inventory, which exceeds the 1,320-gallon SPCC threshold under 40 C.F.R. Part 112. DEF storage and handling, together with engine oils, coolants, and other regulated materials, are inventoried and managed under the HMBP consistent with MM 4.9-3 (TN 269893). Quantities, container types, and final storage configurations will be confirmed in final engineering consistent with Section 3.2 (TN 269893).

10.0 Waste Management

Waste streams attributable to the Backup Generating Facility consist of routine maintenance wastes generated during periodic testing and maintenance of the emergency standby generators. These are managed consistent with Section 4.9 (TN 269893) and the operations-phase waste stream inventory (Table 4.9-4, TN 269893), and are distinct from the general data center and office waste streams described in the Main Application.

Anticipated BGF-specific waste streams include used engine lubricating oil and oil filters; spent engine coolant; and spent Diesel Exhaust Fluid and empty DEF containers. Hazardous and universal wastes — including spent oils, coolants, and regulated materials — will be managed by licensed transporters and delivered to permitted treatment, storage, and disposal facilities (TSDFs), consistent with Title 22, CCR, applicable federal RCRA requirements, and Section 4.9 (TN 269893). Final waste stream quantities and handling procedures will be confirmed in final engineering and reflected in the facility's operating procedures and HMBP consistent with Section 3.2 (TN 269893).

11.0 Site Access and Parking

Site access serving the Backup Generating Facility uses the Project's existing site access and circulation infrastructure described in Section 1.4 (TN 269893); no access or parking facilities are dedicated solely to the BGF. Primary site access is provided from a main entrance on State Route 178, with an internal circulation road looping around the Project Site, and the Project provides approximately 155 on-site parking spaces, as confirmed in Section 1.4 (TN 269893).

Diesel fuel is delivered to the on-site fuel storage area by licensed fuel haulers via SR-178 and US-395, with offloading at the designated fuel storage area (Section 6.4, Section 7.1). Maintenance and emergency access to the generator yards is provided by on-site perimeter access roads around the campus for emergency vehicle circulation, a Knox Box rapid-entry system at the secured main gate on SR-178, and secondary emergency access from Brown Road, with access designed to meet Kern County Fire Department and California Fire Code requirements, as confirmed in Section 4.15 (TN 269893) and consistent with emergency access coordination with KCFD Station 83 (Section 4.9, TN 269893).

12.0 BGF Construction Description

Construction of the Backup Generating Facility occurs within the overall Project construction program described in Section 1.4 (TN 269893), which begins in 2027 and encompasses approximately 48 months, with full operations anticipated in 2031. Construction is organized into three primary phases: (1) site preparation, grading, and infrastructure development; (2) structural and building shell construction; and (3) mechanical, electrical, and data hall systems

installation, commissioning, and closeout, as confirmed in Section 1.4 (TN 269893). Installation of the emergency standby generators, fuel storage tanks, and associated electrical equipment occurs within the mechanical and electrical systems phase. Construction activities will generally occur Monday through Friday, 7:00 a.m. to 6:00 p.m., with occasional deviation as permitted by the County, as confirmed in Section 1.4 (TN 269893).

BGF-related earthwork is encompassed within the Project's conceptual excavation profile summarized in Section 1.4.11 and Table 1-4 (TN 269893). Building and equipment foundations are not expected to extend deeper than 10 feet below grade, and utility trenching will generally range from 3 to 10 feet in depth, with localized deeper sections at crossings, as confirmed in Section 1.4.11 (TN 269893). All earth-disturbing activities will be conducted under the Project Stormwater Pollution Prevention Plan (SWPPP), consistent with applicable drainage standards, EKAPCD dust control rules, and applicable noise regulations, as confirmed in Section 1.4.11 (TN 269893). Final BGF foundation, containment, and equipment pad details will be confirmed in final engineering consistent with Section 3.2 (TN 269893).

13.0 References

The following application documents support this Appendix A.4 Backup Generating Facility Standalone Description:

- Main Application, RB Inyokern Data Center SPPE Application, TN 269893 — Section 1.2, Section 1.4, Section 1.4.2, Section 1.4.3, Section 1.4.4, Section 1.4.7, Section 1.4.11, Section 1.9, Section 2.0, Section 2.3, Section 3.2, Section 4.3, Section 4.6, Section 4.6.5, Section 4.6.5.5, Section 4.9, Section 4.10, Section 4.13, Section 4.15, Section 6, Section 6.4.5
- Appendix A.3 — Generator Data and Specifications, TN 269593 (including Caterpillar 3516E data sheets and Johnson Matthey CompactSCRT General Arrangement Drawing No. 202-C0039989, Revision B)
- Appendix F.1 — Air Quality Impact and GHG Analysis (AQIA), TN 269606 (original); updated AQIA submitted as supplement with new TN assigned at time of submission

- Appendix G.1 — Noise Analysis, TN 269607 (original); supplemental noise analysis submitted as supplement with new TN assigned at time of submission
- Appendix L.1 — One-Line Diagram, TN 269626
- Appendix O.1 — Environmental Sustainability Plan, TN 269666
- SCE Method of Service Study MOS174, March 30, 2026 (Appendix M.3, TN 269893)
- Statement of Intended EKAPCD Permit Conditions, submitted concurrently as supplement with new TN assigned at time of submission