DOCKETED	
Docket Number:	07-AFC-03C
Project Title:	CPV Sentinel
TN #:	243444
Document Title:	Sentinel Energy Center Black Start Petition to Amend
Description:	Sentinel Energy Center Black Start Petition to Amend with Attachments except 9.1
Filer:	Dave Tateosian
Organization:	Clean Power Consulting Partners
Submitter Role:	Applicant Consultant
Submission Date:	6/6/2022 10:26:46 AM
Docketed Date:	6/6/2022

Petition to Amend Sentinel Energy Center (07-AFC-3) Black Start Upgrade

Submitted to: California Energy Commission

Submitted by: Sentinel Energy Center, LLC

June 2, 2022

Table of Contents

Contents

1 Executive Summary

The Sentinel Energy Center, LLC (Sentinel) is a gas turbine peaking power plant located near North Palm Springs, CA. The plant consists of eight (8) General Electric LMS100 gas turbines with a combined net capacity of approximately 850 MW. The plant operates as dispatched by the California Independent System Operator (CAISO) to provide quick start electrical energy to support the Southern California Edison (SCE) electrical system.

Sentinel was certified by the California Energy Commission on December 1, 2010, Docket Number 07-AFC-03, and began commercial operation on August 1, 2013. Subsequent to its certification, the following modifications have been approved:

- Modify the Laydown Area, Notice of Determination March 17, 2011
- General Arrangement Refinements, Notice of Determination June 29, 2011
- Modify the Laydown Area, Notice of Determination August 22, 2011

Sentinel is strategically located in close proximity to SCE's Devers Substation, a major substation for energy being delivered into the Los Angeles Basin. Sentinel is connected to the 220 kV bus at Southern California Edison's (SCE) Devers substation. This connection is the only electrical connection for Sentinel and is used to both export power as well as for back feed to supply station service power to plant auxiliaries when none of the eight LMS100 gas turbine units are running.

CAISO issued the "Los Angeles Basin Black Start Service" Request for Proposal in May 2021. The purpose of this Request for Proposal was to secure additional black start capability – generating units that could start by themselves with no off-site source of electricity – to provide power to aid with restoration of the bulk electric system if the system went black, i.e., no electric power.

Sentinel was one of several entities that submitted proposals to CAISO. Sentinel's proposal was to upgrade the facility to allow any of the eight units to black start and keep the remainder available to start was selected by CAISO in December of 2021. Subsequently, CAISO and SCE stated that they only needed black start capability for four of the eight units at Sentinel.

To add black start capability to the facility, Sentinel is proposing the following modifications to the facility:

- Add a 11.6 MW/23.1 MWH Li-ion battery based black start capability to the facility.
- Supporting modifications to the plant control system and electrical distribution system.
- Security modifications consistent with the facility being a NERC Medium Impact facility.
- A modification to the South Coast Air Quality Management District (SCAQMD) air permit to support black start operation.
- A modification to the CAISO Interconnect Agreement to reflect the addition of the battery energy storage system.

The modification will allow four of the eight units to be used for black start. Normal day to day operations will remain unaffected other than the increased security features that will be implemented as part of the upgrade to Sentinel to serve as a black start facility.

Construction would start in late 2022 or early 2023. The goal is to have the system in operation by the end of May 2023.

Sentinel is located in a rural area with no sensitive receptors in close proximity. The construction work would all take place within the existing facility in a location that was previously disturbed during cut and fill operations for original construction. The air permit modification to support this change will maintain current hourly, daily, monthly, and annual mass emission limits. Therefore, there are no significant environmental impacts associated with this modification.

2 Introduction

2.1 California Energy Commission Post-Certification Modification Process

This Petition to Amend the Certification of the Sentinel Energy Center is being submitted in accordance with Section 1769 of the California Code of Regulations Title 20 Public Utilities and Energy. The following table provides a list of the topics required to be addressed and the section within this Petition where they are addressed.

CEC Topical Area	Responding Section
(A) A complete description of the proposed modifications, including new language for any conditions of certification that will be affected	Section 2.2 Section 3.0
(B) A discussion of the necessity for the proposed modifications	Section 2.4
(C) If the modification is based on information that was known by the petitioner during the certification proceeding, an explanation why the issue was not raised at that time.	Section 2.4
(D) If the modification is based on new information that changes or undermines the assumptions, rationale, findings, or other bases of the final decision, an explanation of why the change should be permitted.	Section 2.5

CEC Topical Area	Responding Section
(E) An analysis of the impacts the modification may have on the environment and proposed measures to mitigate any significant adverse impacts.	Section 4.1
(F) A discussion of the impact of the modification on the facility's ability to comply with applicable laws, ordinances, regulations, and standards.	Section 4.2
(G) A discussion of how the modification affects the public.	Section 5
(H) A list of property owners potentially affected by the modification.	Section 6
(I) A discussion of the potential effect on nearby property owners, the public and the parties in the application proceedings.	Section 7

2.2 Overview of the Modification

The Sentinel black start upgrade will entail the following modifications to the facility:

- Addition of a 11.6 MW/23.1 MWH Li-ion battery. The battery system was sized to meet the design basis requirements. The Tesla Megapack 2XL Li-ion battery system will be used for the system. The Megapack 2XL is a next generation design of the Megapack that is currently in service worldwide. The primary difference between the Megapack and Megapack 2XL design is a change from using Nickel Manganese Cobalt (NMC) battery chemistry to Lithium Iron Phosphate (LFP) battery chemistry providing a higher temperature threshold for thermal runaway. Attachment 9.1 provides further information on the Tesla Megapack 2XL battery energy storage system.
- Modifications to the plant control system and electrical switchgear to automate the stripping of loads off the 5 kV plant electrical distribution system when back feed from the 220 kV is lost so that the connected black start battery does not supply energy to non-black start loads. Additionally, some local manual controls will be automated to allow the plant operators to re-align and sequence loads onto the battery within the requisite time to preclude the turbines going into lockout post-trip from within the control room.

- Security modifications (security cameras, secure facility access) consistent with the facility being reclassified from Low Impact to Medium Impact under NERC rules

In support of these physical modifications to Sentinel, the following modifications will be made to the permitting basis for the facility:

- A modification to the air permit has been requested through the South Coast Air Quality Management District to allow black start operation with higher BACT limits while still maintaining existing hourly, daily, monthly, and annual mass emission limits.
- A Material Modification to the CAISO Interconnect Agreement will be submitted that reflects the addition of the battery energy storage system. The addition of the batteries provides an additional source of fault current which is expected to be approximately 70 amps at the 220 kV level.

2.3 Ownership of the Facility Property

Sentinel Energy Center is wholly owned by Sentinel Energy Center, LLC. Sentinel Energy Center, LLC is owned by Sentinel Power Holdings, LLC (50%) and Diamond Voltage Holdings, LLC (50%).

2.4 Necessity of Proposed Changes

This modification is required for Sentinel to fulfill its new obligation to CAISO to provide black start capability.

The capability to black start Sentinel was not a requirement at the time that Sentinel was originally proposed and permitted.

2.5 Consistency of Modification with Certification

This modification does not change the primary purpose or means of operation of the Sentinel Energy Center. The modification enhances Sentinel's utility and value to the bulk electric system by also providing black start capability.

2.6 Summary of Environmental Impacts

Section 4 provides an evaluation of the environmental impacts and compliance with laws, ordinances, and regulations (LORS). Those evaluations conclude that there are no significant environmental impacts and that Sentinel will continue to comply with applicable LORS.

3 Description of Proposed Modifications

3.1 CAISO/SCE Black Start Capability Requirements

CAISO and SCE both provided requirements that a black start resource must meet. These requirements consisted of the following items:

- Must be able to satisfy the NERC definition of Blackstart Resource.
- Must be able to supply own startup power.
- Must serve own plant load.

- Ability to meet fault impedance requirements of the restoration path. Generator protection relays should be flexible to assume temporary setting changes required to provide adequate protection during anticipated blackstart system configurations. This could be accommodated, but is not limited to, by utilizing microprocessor based protective relays with multiple group setting capability.
- Must be able to modify protective relay settings to meet system requirements during a black start event.
- Must be able to operate for 48 hours continuously.
- Must be able to energize dead transmission bus within three hours.
- Battery load calculations based on a worst case scenario following a facility hot trip, considering a minimum of 3 start attempts.

Subsequent to decision to add black start capacity to Sentinel, CAISO and SCE clarified that they only need four of the eight gas turbines to have black start capability. Additionally, the design basis evolved to require only a one hour standby period until a unit "deemed start" whereupon a unit would start and operate to carry the plant auxiliary electric load until CAISO calls for the unit(s) to connect to and black start the CAISO transmission system.

3.2 Battery Design Basis and Sizing

Sentinel established the following design basis to meet the CAISO/SCE capability requirements: The design basis for the battery sizing was to satisfy the following requirements as described by CAISO:

- All eight gas turbines to be placed on turning gear following the loss of the 220 kV from Devers. The gas turbines were assumed to either have been operating at load and trip on underfrequency or to have already been on turning gear or in standby. The turbines must be placed on turning gear within ten (10) minutes to preclude their going into a four (4) hour thermal lockout.
- If operating prior to the trip, the turbines complete their normal one hour high speed cooldown and thereafter remain in standby (or stay in standby if they were not operating)
- At one hour after the loss of 220 kV from Devers Substation, one of the eight gas turbines performs a first start attempt which fails, then a second start attempt that also fails, followed by a third successful start attempt.

Currently, with back feed from the 220 kV system unavailable, Sentinel is without power except for the battery backed DC[1] lube oil systems and uninterruptible power systems for controls and instrumentation (there is also a diesel driven fire pump). Prior to this modification being implemented, if the 220 kV system that interconnects Sentinel to the SCE Devers Substation were to go black, the gas turbines would trip

[1] DC (direct current)

off line (if running), wind down, and go into a 4 hour lockout. Until back feed power was restored, Sentinel would remain inoperable.

With the implementation of this modification, loss of the 220 kV from Devers would result in operating turbines tripping on underfrequency. Loss of the 220 kV would also trigger opening of the 52-M breaker on the 220 kV connection to Devers, opening of the breakers on the low side of the 220/4.16 kV station service transformers, and opening of the feeder breakers for the 4160/480 V unit and station auxiliary transformers stripping all loads from the plant 5 kV distribution system precluding the black start battery from powering non-black start loads. The 5 kV distribution would then be reconfigured to the black start battery system. These actions are required to reduce the connected load and allow the four 4160/480 V unit and two station auxiliary transformers to be energized by slowly ramping up the voltage over a period of time to mitigate the in-rush currents and stay within the Megapack 2XL operating limits.

With the 4160/480 V unit transformers for the gas turbines and both station auxiliary transformers energized, on-site energy would be available to restart the air compressors (required to provide seal air prior to the normal lube oil pumps starting), restart normal lube oil, and power the starting motors to place the gas turbines on turning gear. All three of these systems are required to preclude the turbines going into lockout.

Sentinel would then remain in standby until either 1) a unit(s) are called upon by CAISO to start and begin supplying the 220 kV system to Devers as part of restoration efforts for the bulk electric system, or 2) remain in standby until such time the operators start a unit within one hour to supply house load and charge the battery to maintain the facility's black start capability until called upon to begin supplying power to the 220 kV system.

The fuel gas compressors are not included as part of the load that must be powered from the BESS as Southern California Gas has provided assurance that the fuel gas supplied to Sentinel will always have a pressure of at least 325 psig. This pressure is sufficient to assure that the minimum pressure for the gas turbines to be started can be met.

Once in operation, each LMS100 has the ability to accept a step-load increase of 8 MW at 0 MW and maintain frequency above 58.8 Hz. The step-load increase of 8 MW applies across the full load range from 0-100% power. The unit normally ramps load at 10 MW/minute. House load in a black start configuration with one unit operating on natural gas line pressure without a fuel gas compressor in operation is approximately 5.5 MW. Water injection into the LMS100 for NOx control will not commence until unit load exceeds 12 MW and fuel gas flow is greater than 10,000 pounds per hour.

To place the turbines on turning gear, power must be restored to the following loads:

- Two 4160/480 V station service transformers to provide control power and power the air compressors. All three air compressors are needed to quickly

recover and provide >60 psig air pressure as a permissive for lube oil to start which in turn is required to operate the starting motor that also serves as the turning gear motor.

- Eight 4160/480 V unit auxiliary transformers to power the turbine lube oil pumps, starting motors, and control power.

In sizing the battery system, there were four criteria that must be met:

- Provide sufficient power – maximum running power is approximately 8.1 MW with seven turbines in their one hour post-trip cooldown and one unit performing a black start. Five Megapack 2XLs are required to supply this load.
- Provide sufficient energy – to 1) provide for the post-trip cooldown of the eight units, 2) maintain the units in standby while one units starts, and 3) perform two failed and one successful start on one of the units. The energy requirement to satisfy this criteria is 14.6 MWH which can be supplied by five Megapack 2XLs.
- Provide sufficient current to accommodate motor in-rush to start the air compressors while maintaining voltage above under-voltage trip setpoints that would cause loads to trip. A related issue of in-rush current for the auxiliary transformers was mitigated by using a slow voltage ramp controlled by the Megapack 2XL inverters to avoid the high in-rush currents that would occur by simply closing the feeder breakers.
- Accommodate a maintenance outage within the battery energy storage system. As the BESS switchgear is designed with one breaker serving each Megapack 2XL, if a breaker were out for maintenance or open for maintenance on the associated transformer/Megapack 2XL, one Megapack 2XL would be unavailable. Thus, the required number of Megapack 2XLs was increased from five to six.

3.3 Black Start Battery Addition

The battery system will be composed of six (6) Tesla Megapack 2XL Li-ion batteries providing 11.6 MW/23.1 MWH. The battery will be located at the south end of the facility in an area that is currently unoccupied. The area was previously disturbed during original construction and is currently surfaced with crushed rock.

Each battery will have its own 480/4160 V step-up dry or oil-filled transformer all of which will connect to a local set of outdoor gathering switchgear.

From the gathering switchgear, a pair of 4160 V feeders will go to the 5 kV power distribution center. For the majority of the distance (approximately 400') the cables will be laid in an existing electrical trench. To reach the gathering switchgear, the trench must be extended approximately 175'. The trench extension will take place within an existing plant road.

For normal operation only one of the two feeders will be in service (only one of the two feeder breakers at the gathering switchgear is normally closed). This is

sufficient for any charging power needs and allows the Bus A and Bus B sides of the 5 kV distribution system to remain separated. For black start operation, both feeder breakers are closed allowing the full battery capacity to discharge through the two feeders to Bus A and Bus B.

3.4 Related Electrical and Control Modifications

To support the black start modification and battery addition, the following changes to the plant control and electrical systems will also be needed:

- Modify the plant control system to interface with the Tesla Site Controller for the Megapack 2XLs and allow operator control of the battery system operation
- Modify electrical protection system to open the main 220 kV breaker on underfrequency on the 220 kV from Devers to island Sentinel, and to also open the feeder breakers on the unit and station auxiliary transformers in preparation for restarting plant loads using the battery system.
- Automate electrical breakers for significant loads not needed for black start such as the gas compressors[2] and the Zero Liquid Discharge system so that they open and such high load non-essential equipment does not restart without operator action when the auxiliary transformers are energized.
- Protective relaying and controls will be added and configured to prevent the batteries from dispatching energy to the grid.

3.5 Security Modifications

The following modifications will be implemented to meet the NERC requirements for a black start facility:

- The NERC categorization will be changed from Low Impact to Medium Impact.
- The Administration Building, within which the Control Room is located, will become a secure building with all visitors required to be escorted.
- Revised visitor check-in, orientation, and escort procedures to accommodate black start facility requirements.
- Additional security cameras for visual monitoring of the entire perimeter fence for breach detection.
- A new badging system and logging system to control access to the site boundary and areas within the site.
- Additional electrical circuits to support the security camera and badging systems.

[2] Southern California Gas company, which supplies natural gas to Sentinel, expects normal gas supply pressure to be available as their gas compressor stations are self-powered using natural gas as the source of energy to power the gas compressors. Gas compressors at Sentinel are required for high plant load operation; starting a unit does not require the gas compressors.

3.6 SCAQMD Air Permit Modification

The SCAQMD application addresses two changes:

- An increase in BACT (ppm) limits during black start operations when a turbine(s) may be operating at Full Speed No Load (FSNL) or low load. In that operating condition, water injection which helps to reduce NOx formation may not be in service due to turbine load being lower than required to initiate water injection. Once the SCR catalyst is at temperature and ammonia injection is in service, turbine emissions will be reduced. Coupled with the low fuel flow due to low load operation, the unit is expected to still meet hourly, daily, monthly, and annual mass emission limits.
- A modification unrelated to the black start modification that 1) adds additional startups while 2) reducing operating hours to maintain current hourly, daily, monthly, and annual mass emission limits. This change is needed to provide additional operating flexibility to meet CAISO dispatch needs.

3.7 CAISO Interconnection Material Modification

The addition of the black start battery system creates the potential for an additional source of fault current. This contribution is expected to be small at the 220 kV level: approximately 70 amps. Sentinel will submit a Material Modification to the CAISO for this addition.

4 Environmental Analysis of Proposed Modification

4.1 Resources

4.1.1 Greenhouse Gas Emissions

Condition C1.6 of the SCAQMD air permit and Condition of Certification AQ-6 limits annual fuel usage to 2,455 million cubic feet per year per turbine. This value is not changed by the air permit modifications for the black start operation and increased number of starts. Therefore, this modification will not increase the production of greenhouse gases at Sentinel.

4.1.2 Air Quality

This modification does not add any new combustion sources at Sentinel. As discussed in the SCAQMD Application (see Attachment 9.2), the hourly, daily, monthly, and annual mass emission limits remain unchanged.

The air permit application requests that BACT compliance during black start operations when a turbine(s) may be operating at Full Speed No Load (FSNL) or low load be based on existing permitted hourly mass emission limit during start-up. In that operating condition, water injection which helps to reduce NOx formation may not be in service due to turbine load being lower than required to initiate water injection. Once the SCR catalyst is at temperature and ammonia injection is in service, turbine emissions will be reduced.

During black start operation, up to two turbines may be operating at low load to carry house load and prevent depleting the batteries depending how long is needed

before the units are asked to begin delivering energy to the grid to assist with system restoration efforts. In that configuration, with the low fuel flow due to low load operation and the SCR in service (once it reaches temperature), the unit is expected to still meet hourly, daily, monthly, and annual mass emission limits. While stack exit velocity will be lower due to the low load operation, the amount of fuel being burned is also much lower. Once energy starts being delivered to the grid, unit load will increase and the units will begin operating within the previously analyzed range of operation.

Ambient air modeling performed for the original project considered a range of equipment operating configurations, load profiles, and ambient air conditions to fully evaluate worst-case predicted ambient air impacts. Criteria pollutant emission rates and stack parameters for three load normal operating conditions (50 percent, 75 percent, and 100 percent) at three ambient temperatures (17°F, 72°F, and l07°F). The combined scenarios in the modeling assessments present the bounds of the operating range of each proposed CTG, and all eight turbines in operation between 50 MW and 100% load.

In addition, the original CEC Final Staff Assessment (April 2010) considered modeled air quality impacts during both start-up and initial commissioning activities which includes FSNL, when up to five trains turbines would be commissioned at approximately the same time. Modeling performed in support of the FSA, the SCAQMD Permit to Construct/Permit to Operate (PTC/PTO) application, and subsequent PTC/PTO Amendment for the CPV Sentinel Energy Project, demonstrate that the proposed amendment will not cause or further contribute to a violation of any ambient air quality standard.

The mitigation measures described within Condition of Certification AQ-SC3 “Construction Fugitive Dust Control” will be implemented for this modification.

The mitigation measures described within Condition of Certification AQ-SC6 “Off-Road Diesel Construction Equipment” will be implemented for this modification.

The mass emissions limits described within Condition of Certification AQ-1 and AQ-2 will be complied with for this modification.

Condition of Certification AQ-3 will be modified as follows (changes are in red, additions are italicized, deletions are struck out) to allow additional startups and startup time for blackstart operation:

> The 2.5 ppm NOx emission limit, the 2.0- ppm VOC limit and the 4.0 ppm CO emission limit shall not apply during turbine commissioning, start-up, ~~and~~ shutdown*, and black start operation and testing*. The commissioning period shall not exceed 150 operating hours per turbine from the initial start-up. Following commissioning, startups shall not exceed 25 minutes and shutdowns shall not exceed 10 minutes. Written records of commissioning, start-ups and shutdowns shall be kept and made available to SCAQMD and submitted to the CPM for approval. Emissions of NOx shall not exceed 29.54 lbs/hr for any hour in which a startup occurs. Units 1 through 8 shall be limited to a maximum of ~~300~~*410* startups per year.

The 19 lb/mmscf NOx emission limit(s) shall only apply during interim reporting period during initial turbine commissioning and the 12.26 lbs/mmscf shall apply only during the interim reporting period after the initial turbine commissioning period, to report RECLAIM emissions. The interim period shall not exceed 12 months from the initial start-up date.

For this condition, *normal* startup shall be defined as the start up process to bring the turbine in full successful operations. If during startup the process is aborted and the startup is restarted, then the startup and restart is defined as one startup. In this case the startup time shall not exceed 1 hour.

For this condition, a black start startup shall be defined as the start up process, which may exceed one hour, to start the turbine and operate at low load with or without water injection as:

1. *Directed by the California Independent System Operator to support restoration of the bulk electric system, or*
2. *Required at the Owner's discretion during a loss of external power supply to recharge the black start battery energy storage system to protect the ability of the facility to perform a subsequent black start using the battery energy storage system when called upon by the California Independent System Operator, or*
3. *Required for black start readiness testing in conjunction with the California Independent System Operator.*

A black start startup event will terminate once the California Independent System Operator has declared that normal operations have been restored.

The project owner/operator shall complete construction and the project shall be fully operational within three years of the issuance of the permit to construction from the District.

Condition of Certification AQ-4 will be modified as follows (additions are italicized, deletions are struck out) to allow for black start operation:

Each combustion turbine stack shall have the following emission limitations.

2.5 PPM NOx emission averaged over 60 minutes at 15 percent oxygen, dry basis.

4.0 ppm CO emission averaged over 60 minutes at 15 percent oxygen, dry basis.

2.0 ppm VOC emission averaged over 60 minutes at 15 percent oxygen, dry basis.

5.0 ppm NH3 emission averaged over 60 minutes at 15 percent oxygen, dry basis.

During black start operation and testing, only the limits contained within AQ-1 and AQ-6 remain in effect.

Condition of Certification AQ-5 will be modified as follows (additions are italicized, deletions are struck out) to allow for black start operation:

The project owner may at no time purposefully exceed either the mass or concentration emission limits set forth in Conditions of Certification AQ-1, 2, -3 or -4 *except during black start operations as noted in AQ-3 and AQ-4*.

Other air quality Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Therefore, there are no significant adverse impacts to air quality.

4.1.3 Public Health

This modification does not add any new combustion sources at Sentinel.

A Li-ion battery fire is a potential new source of combustion products and gases. As discussed in Section 4.1.4, there is a very low probability of a Li-ion battery fire due to the physical protection of the Megapack 2XLs, the control and monitoring system that will shut down battery module(s) that appear to be in a questionable state, as well as the use of LFP battery chemistry.

Other public health Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Because there are no additional combustion sources introduced by this modification, the very low likelihood of a battery fire, and the distance to nearby residences, there is no significant adverse impact to public health.

4.1.4 Worker Safety/Fire Protection

Construction workers will receive site orientation training prior to commencing work, a portion of which addresses site safety and work practices. Being an operating facility, there will be close communication between the operating and construction staff during the course of construction and testing. Critical tie-in work will be performed during unit/plant outages to further reduce the risk to workers and plant equipment.

The Tesla Megapack 2XLs, transformers, and switchgear will be protected from physical damage by a series of bollards as well as on-site traffic being limited to a maximum speed of 10 mph.

The Megapack 2XL design includes several engineered features to prevent (LFP battery chemistry) and detect (on-line and remote monitoring) incipient thermal runaway conditions and remove from service the affected battery modules and alert the operators. In the event of a thermal runaway event that develops into a fire, the design basis of the Megapack 2XL is that the Megapack 2XL is allowed to burn and that the fire does not propagate. The possibility of a deflagration event is precluded by the provision of both vents and igniters to preclude the build-up of combustible gases. Such a fire can produce various gases that are released to the atmosphere. However, Sentinel is located in a rural area and the nearest residences are a half-mile to the southwest with a prevailing wind blowing to the northwest.

On July 30, 2021, a Tesla Megapack at the Victorian Big Battery in Australia caught fire during commissioning of the battery system. The Tesla Megapack is an earlier design that uses NMC battery chemistry which is not as resistant to thermal

runaway as the LFP battery chemistry used in the Megapack 2XL being used at Sentinel. The fire at the Victorian Big Battery is the only occurrence of a Megapack catching fire other than for UL certification testing purposes. This event was thoroughly investigated (see Attachment 9.3) and as a result some changes in design were incorporated and retrofitted to the fleet as well as changes to the commissioning procedures. The Megapack 2XL is also a beneficiary of this experience as well as using LFP battery chemistry which has a higher temperature threshold for thermal runaway to occur.

In the event of a fire, water would be sprayed on the surrounding on the surrounding Megapack 2XLs to keep them cool consistent with Tesla's firefighting recommendations. A fire hydrant is located approximately 50 feet away and a minimum of 2,300,000 gallons of raw water is stored on site for firefighting purposes. The burning Megapack would be allowed to burn itself out which is expected to occur within a few hours.

The Riverside County Fire Department (RCFD) currently provides fire protection services for Sentinel. Sentinel has discussed the project with the RCFD as well as the Tesla battery firefighting strategies. RCFD stated they were familiar with the Tesla Megapack through several solar-storage hybrid projects. Tesla's instructions for first responders can be viewed at https://www.tesla.com/firstresponders. An application to the RCFD to review the battery addition at Sentinel has been submitted.

Other worker safety Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Because there are no additional combustion sources introduced by this modification, the very low likelihood of a battery fire, and the distance to nearby residences, there is no significant adverse impact to worker safety or fire protection.

4.1.5 Hazardous Materials Management

With the addition of Li-ion batteries to the Sentinel site, Appendix A "Hazardous Material" contained within the Final Commission Decision and referenced by Condition of Certification HAZ-1 will be updated as follows:

Hazardous Material	Primary Application	Estimated 30-Day Usage	Estimate Storage Quantity	Storage Type
Li-ion Batteries	Energy Storage	24 Battery Modules per Megapack 2XL, there are six Megapack 2XLs in total, initial installation	No additional battery modules are stored on site, all reside within the Megapack 2XLs	Located within Megapack 2XL Containers

The Business Plan and Risk Management Plan (RMP) that were prepared pursuant to the California Accidental Release Program (CalARP) will be updated and provided to the Riverside County Department of Environmental Health as stated within the Final Commission Decision and referenced by Condition of Certification HAZ-2.

Other hazardous material management Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Therefore, there are no significant adverse impacts to hazardous materials management.

4.1.6 Waste Management

As the battery will only be used for black start purposes, no waste batteries are expected to be produced as the batteries will normally be in standby at close to full charge. If it is necessary to replace a battery module, that would be performed by Tesla and they would handle recycling of the battery.

Other waste management Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Therefore, there are no significant adverse impacts to waste management.

4.1.7 Biological Resources

Construction workers will receive site orientation training prior to commencing work, a portion of which addresses biological resources on site.

The area where the battery energy storage system will be installed is a previously disturbed area that was subject to cut and fill operations within the facility that is surfaced with crushed rock. Planned excavations are within seven (7) feet of the surface and will take place within the fill material which is over twenty (20) feet deep (see Figure 8.5 and Attachment 9.4).

There is similar nearby space within the facility that can be used for laydown purposes.

The mitigation measures described within Condition of Certification BIO-5 “Worker Environmental Awareness Program” will be implemented for this modification.

The mitigation measures described within Condition of Certification BIO-8 “Mitigation Management to Avoid Harassment or Harm” will be implemented for this modification.

Other biological Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Therefore, there are no significant adverse impacts to biological resources.

4.1.8 Soil and Water Resources

The battery energy storage system does not consume any water, and therefore there is no significant adverse impact on water resources.

The battery energy storage system will be installed is a previously disturbed area that was subject to cut and fill operations within the facility that is surfaced with crushed rock. There is similar nearby space within the facility that can be used for laydown purposes.

The construction of the battery energy storage system will convert a portion of the area that currently allows for percolation of stormwater into the ground into areas covered with concrete for the Megapack and transformer foundations. Each of the Megapack/transformer islands are relatively small – approximately 10 feet by 45 feet or 450 square feet. Stormwater falling on these foundations will flow into the surrounding areas covered by crushed rock and into the soil. The Megapack/transformer foundations, and the switchgear foundation, total 3,100 square feet. The area where the battery energy storage system will be located totals approximately 15,000 square feet. This does not include the adjacent 16,000 square feet of permeable surface to the west. Thus, adequate permeable surface remains around and adjacent to the new foundations for stormwater to percolate into the soil.

Other soil and water Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Therefore, there are no significant adverse impacts to soil and water resources.

4.1.9 Cultural Resources

Construction workers will receive site orientation training prior to commencing work, a portion of which addresses cultural resources on site.

The area where the battery energy storage system will be installed is a previously disturbed area that was subject to cut and fill operations within the facility and was surfaced with crushed rock. Figure 8.5 contains the grading plan for the area where the Megapack 2XLs will be located as well. Attachment 9.4 contains a series of aerial and ground level photographs showing the prior site disturbance where the battery energy storage system will be located. The depth of fill where the Megapack 2XLs is approximately twenty (20) feet.

There is similar nearby space within the facility that can be used for laydown purposes. The maximum planned depth of excavation is seven (7) feet and will take place within the fill material which is over twenty (20) feet deep (see Figure 8.5 and Attachment 9.4). Therefore, no ground disturbance within native soils is expected and there are no significant adverse impacts to cultural resources.

The mitigation measures described within Condition of Certification CUL-5 “Worker Environmental Awareness Program” will be implemented for this modification. Other cultural Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Therefore, there are no significant adverse impacts to cultural resources.

4.1.10 Geological and Paleontological

For this modification, additional geotechnical investigations will conducted to gain a better understanding of the fill materials that were used and finalize the foundation

design. No new geotechnical hazards are expected to be identified or created by this modification.

All soil disturbance is expected to occur in prior fill material. Therefore, the likelihood of finding any paleontological items is unlikely.

The mitigation measures described within Condition of Certification PAL-4 “Worker Environmental Awareness Program” will be implemented for this modification. Other paleontological Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Therefore, there are no significant adverse impacts to paleontological resources.

4.1.11 Land Use

As modified, there will be no impact to land use as all of the modifications take place within the existing Sentinel facility.

Other land use Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Therefore, there are no significant adverse impacts to land use.

4.1.12 Traffic and Transportation

During implementation of this modification, there will be a small temporary increase in traffic to Sentinel associated with delivery of the Megapack 2XLs, transformers, bulk materials, and workers. Transportation permits/licenses will be obtained from the California Highway Patrol and/or CalTrans as required for delivery of the loads. Transport of the Megapack 2XLs will comply with requirements for transportation of hazardous materials (the Lithium-ion batteries). All project deliveries will comply with the Conditions of Certification.

Other traffic and transportation Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Therefore, there are no significant adverse impacts to traffic and transportation.

4.1.13 Socioeconomics

The addition of the battery energy storage system and associated electrical and physical modifications will require construction workers. The construction workforce is expected to peak at approximately 40 people with an overall duration of six months. No additional plant operators will be required.

Other socioeconomics Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Given this low level of activity, there will be no significant impacts to public services, housing, or utilities, and as a result there will be no significant adverse socioeconomic impacts.

4.1.14 Noise and Vibration

The addition of the Megapack 2XLs and transformers will have a negligible effect on noise radiated from Sentinel. The only new source of noise is the cooling system

for the Megapack 2XLs, and these are much quieter than the predominant noise sources on site. Therefore, there will be no significant adverse noise impacts.

The mitigation measures described within Condition of Certification NOISE-6 "Construction Time Restrictions" will be implemented for this modification.

Other noise Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Therefore, there are no significant adverse impacts to noise and vibration.

4.1.15 Visual Resources

The Megapack 2XL is approximately 8.3 feet tall. There are many other items on site – tanks, stacks, SCR housings, transformers, and buildings – that are taller and far more prominent. Thus, the addition of the battery energy storage system will not have a significant adverse visual impact.

Two new light standards are being added as part of the upgrade to provide illumination for the operators. The light standards will conform with the design requirements contained within Condition of Certification VIS-2 "Temporary and Permanent Exterior Lighting." Other visual resources Conditions of Certification were either completed as part of original construction or are not applicable to this modification.

Therefore, there are no significant adverse impacts to visual resources.

4.2 LORS

As modified, Sentinel Energy Center will continue to comply with applicable laws, ordinances, and regulations (LORS).

5 Potential Effects on the Public

As modified, Sentinel Energy Center will not create any significant adverse environmental impacts for the reasons stated in Section 4.

6 List of Property Owners

The following parcels are part of the Sentinel site.

Property Owner	Parcel APN Number
CPV Sentinel c/o Accounting Manager 8403 Colesville Road No. 915 Silver Spring, MD 20910	668140002 668140003 668140020
D&E Land Company 1090 N Palm Canyon No. A Palm Springs, CA 92262	668130005 668140001
Wintec Property 2045 E Tahquitz Canyon Way Palm Springs, CA 92262	668130007

The following parcels are adjacent to the Sentinel site.

Property Owner	Parcel APN Number
Barbara Braithwaite 7 Yosemite Road San Rafael CA, 94903	668140012
Jerome Brastad PO Box 903 Thousand Palms, CA 92276	668140004
Heather Brown 10000 Tilton Mine Road Redding, CA 96001	668130025
Anita Comeau PO Box 1334 Palm Springs, CA 92263	668120018 668130023
D&D Land Company 1090 N Palm Canyon No. A Palm Springs, CA 92262	668140009 668270010 668270011
Ion Ene 7314 Saint Johns Court Manassas, VA 20109	668140013
Sean Foster c/o Aaron Wolf PO Box 580959 N Palm Springs, CA 92258	668140033
Jose Holguin 47795 Dune Palms Road No. 82 La Quinta, CA 92253	668140006
Horowitz Family 5922 Melvin Ave Tarzana, CA 91356	668270012
Kenneth Jacques c/o Stephen Brown 10000 Tilton Mine Road Redding, CA 96001	668130024
George Leatham Cabin 31 Sandy Beach Vallejo, CA 94590	668140011
Charles Lopez 65919 5th Street Desert Hot Springs, CA 92240	668140017 668140018 668140019
Michael Pins 458 Monte Vista Palm Desert, CA 92260	668140005

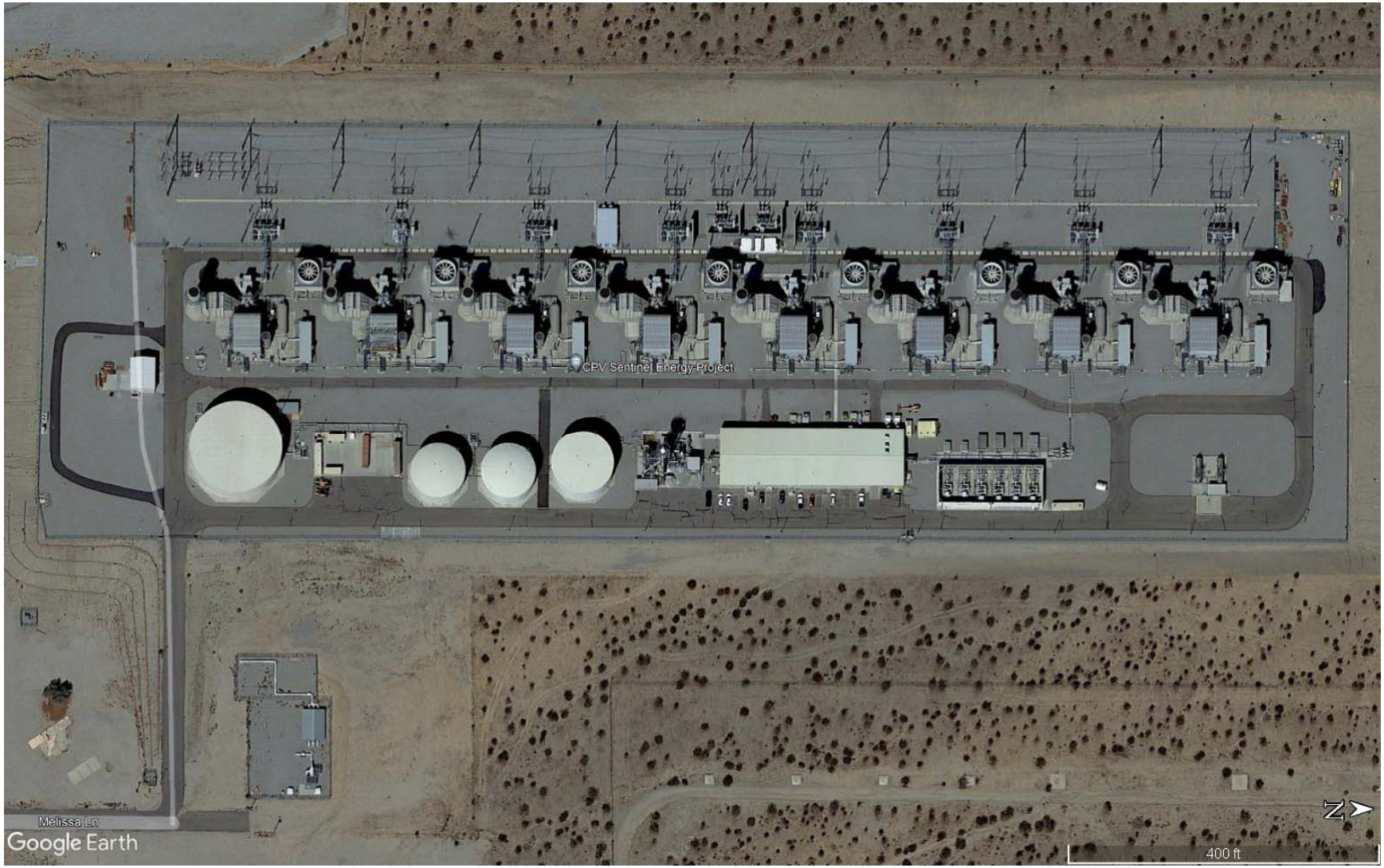
Property Owner	Parcel APN Number
Mae Skoubye 3055 Millerama Avenue W Valey City, UT 84119	668140010
Southern California Edison Attn C S Reenders Assistant Comptroller PO Box 800 Rosemead, CA 91770	668120013 668130016 668130017 668130018 668130019 668130020 668130021 668130022 668140024 668140025 668140026 668140034 668140035 668140036 668140037 668140038 668140039
US Department of the Interior Washington, DC 21401	668140027 668140028 668140029
Suzy Yu 1623 Kains Ave Berkeley, CA 94702	668140015

7 Potential Effects on Property Owners

As modified, Sentinel Energy Center will not have any greater impact on adjacent property owners than current operations for the reasons stated in Section 4.

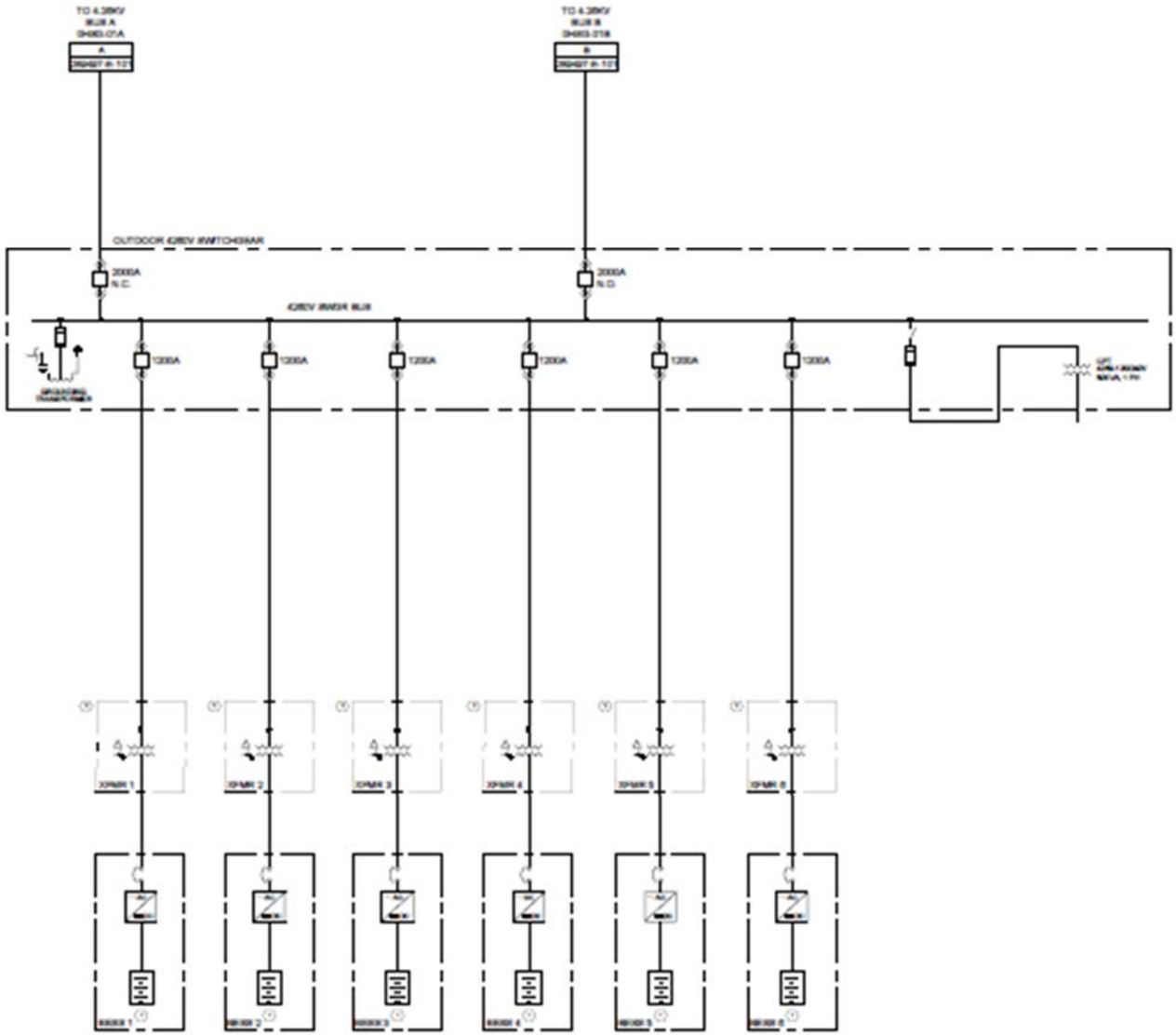
8 Figures

8.1 Sentinel Site

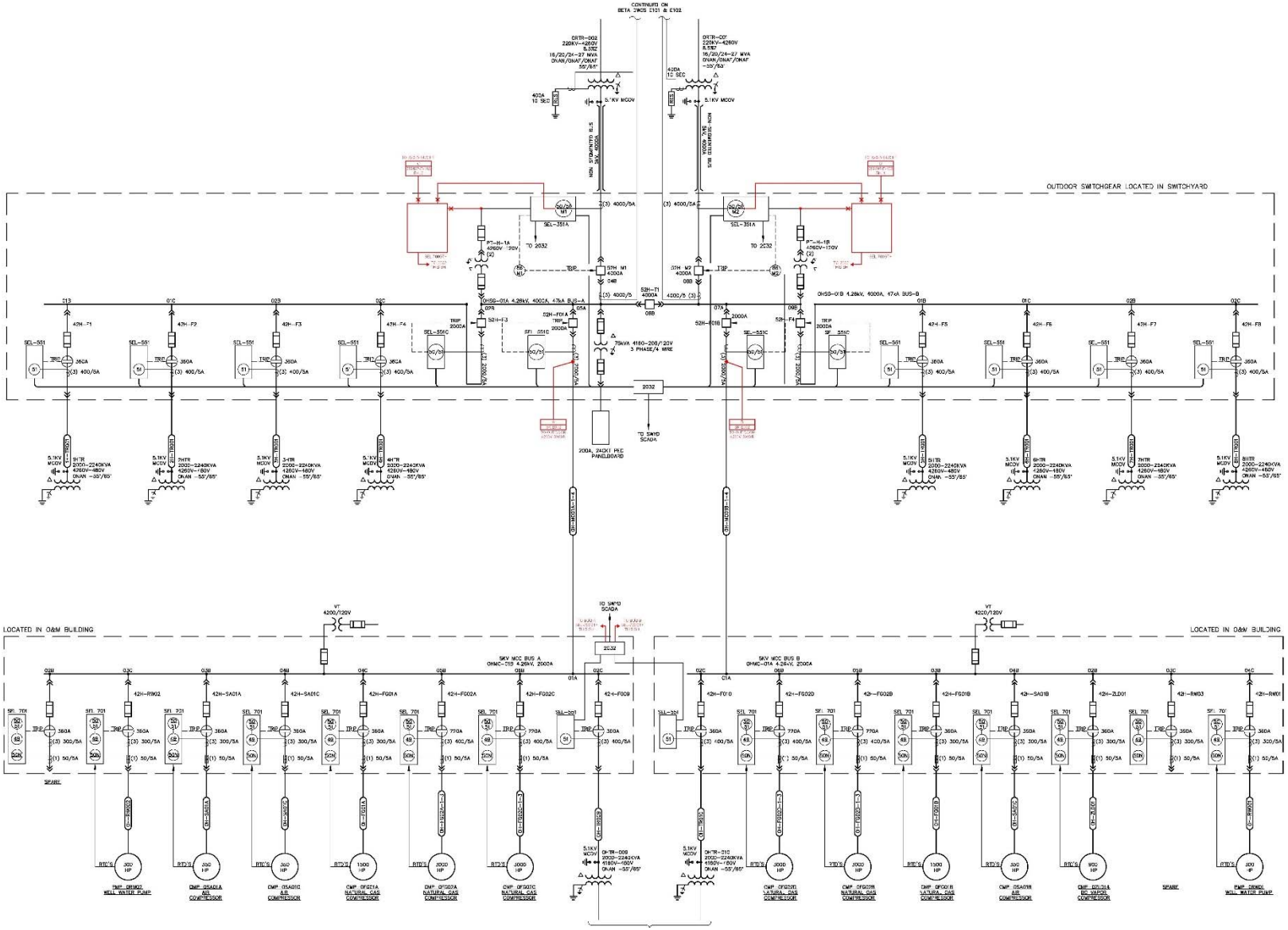


8.2 Battery Site Plan

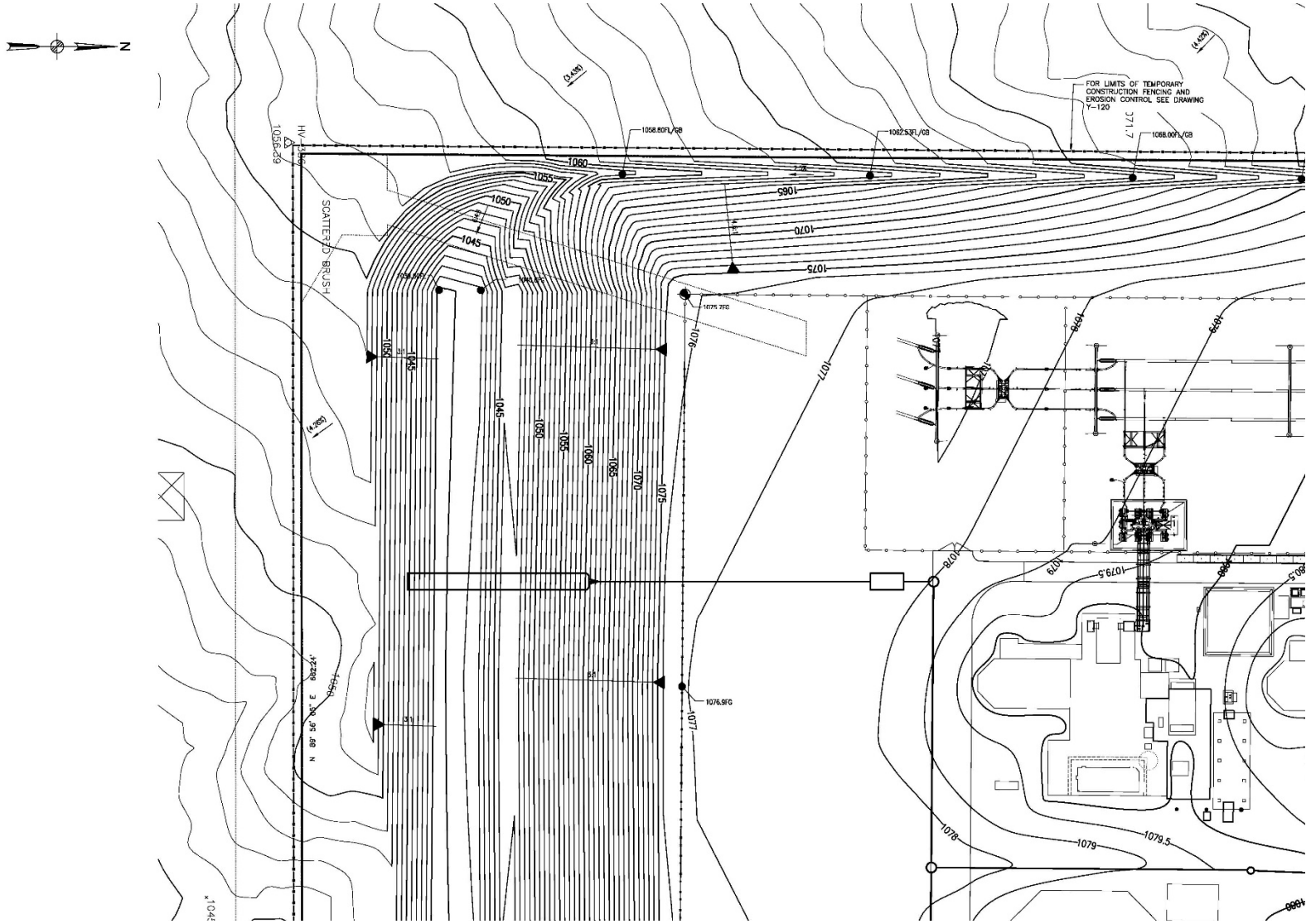
8.3 Battery Single Line Diagram



8.4 Sentinel Single Line Diagram



8.5 Sentinel Grading Plan



9 Attachments

9.1 Tesla Megapack 2XL Data Sheet

9.2 SCAQMD Applications for Modification: Increase Turbine Annual Startups and Add Black Start Capability, February 2022

9.3 “Victorian Big Battery Fire: July 30, 2021” Fisher Engineering and Energy Safety Response Group, January 25, 2022

9.4 Original Construction Ground Disturbance Photographs

9.5 Property Owner Map

Attachment 9.1

Tesla Megapack 2XL Data Sheet

Attachment 9.2

SCAQMD Applications for Modification: Increase Turbine Annual Startups and Add Black Start Capability, February 2022

Sentinel Energy Center, LLC

15775 Melissa Lane Rd North Palm Springs, CA 92258

SCAQMD Facility ID: 152707

February 2022

Prepared by:

Yorke ENGINEERING, LLC
www.YorkeEngr.com

Office Locations:
Los Angeles, Orange County, Riverside, Ventura, San Diego, Fresno, Berkeley, San Jose, Bakersfield

Tel: (949) 248-8490
Fax: (949) 248-8499

Applications for Modification: Increase Turbine Annual Startups and Add Black Start Capability

Applications for Modification: Increase Turbine Annual Startups and Add Black Start Capability

Prepared for:

Sentinel Energy Center, LLC
15775 Melissa Lane Road
North Palm Springs, CA 92258

SCAQMD Facility ID: 152707

February 2022

Table of Contents

Table of Appendices

List of Tables

List of Acronyms and Abbreviations

A/N	Application Number
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
CAA	Clean Air Act
Cal-ISO	California Independent Systems Operator
CEMS	Continuous Emissions Monitoring System
CEQA	California Environmental Quality Act
CO	Carbon Monoxide
FSNL	Full Speed No Load
HI	Hazard Index
MICR	Maximum Individual Cancer Risk
MM	Million
MMBtu	Million British Thermal Units
MW	Megawatt
MWh	Megawatt-Hour
NO_x	Nitrogen Oxides
OxCat	Oxidation Catalyst
PM_{10}	Particulate Matter Less Than 10 Microns in Size
RECLAIM	Regional Clean Air Incentives Market
RTC	RECLAIM Trading Credit
SCAQMD	South Coast Air Quality Management District
SCGT	Simple Cycle Gas Turbine
SCR	Selective Catalytic Reduction
SO_x	Sulfur Oxides
TAC	Toxic Air Contaminant
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

Applications for Modification: Increase Turbine Annual Startups and Add Black Start Capability

1.0 INTRODUCTION

1.1 Application Overview

On behalf of Sentinel Energy Center, LLC (Sentinel), Yorke Engineering, LLC (Yorke) is submitting this application package to request modifications to the Permits to Operate for its eight (8) natural gas-fired Simple Cycle Gas Turbines (SCGTs) [Application Numbers (A/Ns) 472139, 472141, 472143, 472147, 472150, 472154, 472156, 472158; Device ID Nos. D1, D7, D13, D19, D25, D31, D37, D43, respectively] to increase the allowable annual startups per SCGT listed in Conditions A99.3, A99.9, A99.10, and A433.1. There are no physical modifications to the SCGTs associated with this permit action.

In addition, Sentinel was awarded an 850-megawatt (MW) black start project by California Independent Systems Operator (Cal-ISO) and is proposing to install a utility-scale lithium-ion battery Tesla Megapack Island consisting of 12 Tesla Megapacks (or equivalent), each 2 MW/4 megawatt-hours (MWh), in order to provide black start capability to respond to grid-wide blackouts as determined by Cal-ISO. There are no proposed air emissions increases associated with the Tesla Megapack Island or the black start capability project.

To summarize, Sentinel requests the following:

- Modifications authorizing an increase in annual startups for the eight SCGTs from 300 startups each to 410 startups each; and
- Construction of a Megapack Island consisting of 12 Tesla Megapacks (or equivalent), each 2 MW/4 MWh, to provide black start capability.

This package contains the information necessary for the District to process and approve the applications. As a Minor Permit Revision, we request that within 45 days of this application being deemed complete, the amended Facility Permit be sent to the United States Environmental Protection Agency (U.S. EPA) for a 45-day review per Rule 3005(c)(2). Application forms and supporting documentation are provided as appendices.

Sentinel is requesting Expedited Permit Processing for this application. A Form 400-XPP is included in Appendix A and additional fees are submitted.

1.2 Facility Information

Sentinel is located in North Palm Springs, CA. Permitted equipment includes eight (8) SCGTs, each rated at 103 MW output, and a 274-horsepower diesel-fueled engine that drives a fire pump. Each SCGT is connected to SCR and OxCat. Ammonia is provided to the SCR from two (2) storage tanks containing 19% (w/w) aqueous ammonia.

Facility information is provided in Table 1-1.

Table 1-1: Facility Information

Applicant's Name:	Sentinel Energy Center, LLC			
Applicant Contact Information:	Mr. David Wells EHS Coordinator Office: (760) 288-7901 E-mail: D.Wells@DGC-ops.com			
Applicant Responsible Official:	Mr. Dennis Johnson Plant Manager Office: (760) 288-7901 E-mail: D.Johnson@DGC-ops.com			
Facility ID:	152707			
RECLAIM:	NO_x:	☒	SO_x:	☐
	Cycle:	1	Zone:	Inland
Title V:	Yes			
Mailing Address:	P.O. Box 1328 Desert Hot Springs, CA 92240			
Equipment Location:	15775 Melissa Lane North Palm Springs, CA 92258			

1.3 Project Background

Sentinel operates eight (8) SCGTs, each with a maximum rated generating capacity of 103 MW gross output. Each SCGT is equipped with emissions control equipment including a combination of water injection and Selective Catalytic Reduction (SCR) to reduce emissions of nitrogen oxides (NO_x), and Oxidation Catalyst (OxCat) to reduce carbon monoxide (CO) and volatile organic compound (VOC) emissions.

Sentinel is a peaker facility that operates in response to utility grid power demands requested for Cal-ISO. Grid power demand requests are increasing, and Sentinel requires the operational flexibility for additional annual startups.

In addition, Sentinel was awarded an 850 MW black start project by Cal-ISO to provide black start capability to respond to grid-wide blackouts as determined by Cal-ISO, which will require the installation of a Tesla Megapack Island consisting of 12 Tesla Megapacks, each 2 MW/4 MWh. Widespread system outage emergencies are rare, and it is expected that such emergencies will not occur more than once every 20 to 30 years.

1.4 Application Forms

This application package contains the forms necessary for District processing. The application forms are included in Appendix A and are summarized in Table 1-2.

Table 1-2: SCAQMD Application Forms

Form and Title	Equipment	Permit Action
400-A – Application for Permit or Plan Approval	Gas Turbine No. 1; Device ID No. D1 (A/N 472139)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 2; Device ID No. D7 (A/N 472141)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 3; Device ID No. D13 (A/N 472143)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 4; Device ID No. D19 (A/N 472147)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 5; Device ID No. D25 (A/N 472150)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 6; Device ID No. D31 (A/N 472154)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 7; Device ID No. D37 (A/N 472156)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 8; Device ID No. D43 (A/N 472158)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Black Start Megapack Island	New Construction
400-A – Application for Permit or Plan Approval	RECLAIM/ Title V Permit	RECLAIM/Title V Facility Permit Amendment
400-XPP – Express Permit Processing Request	Project	Permit Processing
400-CEQA – California Environmental Quality Act Applicability	Project	Permit Processing
500-C1 – Compliance Status Report	Project	RECLAIM/Title V Facility Permit Amendment
500-F1 (Title V) – Title IV – Acid Rain Phase II Facility Information Summary	Project	RECLAIM/Title V Facility Permit Amendment
500-A2 – Title V Application Certification	Project	RECLAIM/Title V Facility Permit Amendment

1.5 Application Preparation

This permit application was prepared by Eduardo Jimenez, with Peer Review by James Adams and Greg Wolffe of Yorke Engineering, LLC. If there are technical questions regarding this application, please use the contact information provided in Table 1-3.

Table 1-3: Application Preparers

Name:	Eduardo Jimenez CPP #E1905	James Adams CPP #M6901	Greg Wolffe CPP #D11338
Role:	Application Preparation	Application Review	Application Review
Phone:	(951) 742-7548	(949) 416-0963	(949) 248-8490
Cellular:	(949) 392-3059	(949) 573-7924	(714) 315-9049
E-mail:	EJimenez@YorkeEngr.com	JAdams@YorkeEngr.com	GWolffe@YorkeEngr.com

2.0 PROJECT DESCRIPTION

2.1 Project Description

Sentinel is proposing to increase the allowable annual startups per SCGT listed in Conditions A99.3, A99.9, A99.10, and A433.1 from 300 per year to 410 per year to provide added operational flexibility to respond to power demand requests from Cal-ISO. The increase in startups and shutdowns are expected to result in no net emissions increase in hourly, daily, monthly, annual emissions, or 30-day average since there are no proposed changes in the startup or shutdown durations and no proposed changes in the number of startups or shutdowns per day or per month. Sentinel may decrease the number of normal operating hours for there to be no net emissions increase in annual emissions due to the increase in startup/shutdown time per year and the greater hourly emissions during startup/shutdown operations.

To fulfill Cal-ISO's black start capability requirements, Sentinel will install a battery capable of starting a gas turbine if a system-wide outage occurs and there is no power available from the grid. Sentinel would operate per the instructions of Cal-ISO to restore power to the electricity grid during a system outage. Manufacturer specifications for the proposed utility-scale lithium-ion battery Megapack Island is included in Appendix B.

Operating during a black start event could require operation of a gas turbine at full speed no load (FSNL) or at minimum load for an extended period, when all the emissions controls may not be operable or achieving optimal control efficiencies, possibly resulting in emission concentrations that are in excess of the currently permitted BACT concentration limits for normal operations, but within hourly start emissions. Sentinel will continue to meet mass hourly start-up emissions limits during black start operations.

There are no physical modifications to the SCGTs associated with the annual startups increase request or the black start capability request.

2.2 Detailed List of Permit Modification Parameters

The post-project permitting will include 410 startups and shutdowns per calendar year. The permit modification proposes to increase startups and shutdowns by decreasing the potential for normal operating hours and CO emission rate during shutdown. Calculation parameters are provided in Table 2-1.

Table 2-1: Operating Parameters

Process Parameter	Pre-Project	Post-Project	Summary of Change
Starts/stops per year	300	410	Increase
Startup Duration (minutes)	25	25	–
Shutdown Duration (minutes)	10	10	–
Total Hours in Startup (hr/yr)	125	171	Increase
Total Hours in Shutdown (hr/yr)	50	68	Increase
Total Hours in Operation (hr/yr)	2,803	2,440	Decrease
Total Hours in Normal Operations (hr/yr)	2,628	2,201	Decrease
Normal Operations NO_x Emission Rate (lb/hr)	7.92	7.92	–
Normal Operations CO Emission Rate (lb/hr)	7.72	7.72	–
Normal Operations VOC Emission Rate (lb/hr)	2.21	2.21	–
Normal Operations SO_2 Emission Rate (lb/hr)	0.61	0.61	–
Normal Operations PM_{10} Emission Rate (lb/hr)	6.00	6.00	–
Startup NO_x Emission Rate (lb/hr)	59.76	59.76	–
Startup CO Emission Rate (lb/hr)	38.15	38.15	–
Startup VOC Emission Rate (lb/hr)	10.32	10.32	–
Startup SO_2 Emission Rate (lb/hr)	0.42	0.42	–
Startup PM_{10} Emission Rate (lb/hr)	6.00	6.00	–
Shutdown NO_x Emission Rate (lb/hr)	34.95	34.95	–
Shutdown CO Emission Rate (lb/hr)	203.88	171.82	Decrease
Shutdown VOC Emission Rate (lb/hr)	17.48	17.48	–
Shutdown SO_2 Emission Rate (lb/hr)	0.12	0.12	–
Shutdown PM_{10} Emission Rate (lb/hr)	6.00	6.00	–

3.0 EMISSIONS

3.1 Increase Number of Annual Startups

The proposed increase in startups per year will impact emissions of NO_x, CO, and VOC. This project proposes to increase the allowable annual startups per SCGT. A change in the startup/shutdown duration is not proposed and will remain at 25/10 minutes per event. Condition C1.1 limits total natural gas usage of a single turbine to no more than 425 million (MM) cubic feet per calendar month. Condition C1.6 limits fuel usage to no more than 2,455 MM cubic feet per year per turbine.

Monthly emissions are directly limited on a pound per month basis through a federally enforceable permit condition. Condition A63.1 limits particulate matter less than 10 microns in size (PM_{10}), CO, sulfur oxides (SO_x), and VOC emissions to 2,425 pounds, 6,477 pounds, 293 pounds, and 1,432 pounds per month, respectively. These monthly emissions assume two startups per day for 30 days per month (60 startups per month). Therefore, the requested increase in annual startups to 410 per year falls within the existing permitted limits for all monthly emission limits; continued compliance with the monthly emissions limits can be expected and no change is expected for the hourly, daily, or monthly emissions.

Annual emissions are also directly limited through Condition A63.2 for PM_{10} and SO_x on a pounds per year basis. However, because SO_x and PM_{10} are fuel-based with similar emissions during startup, shutdown, and normal operations, and the existing fuel limits (C1.1 and C1.6) will not increase, the proposed increase in startups per year is not expected to result in an increase in emissions of SO_x or PM_{10}.

The proposed project may result in an increase in annual NO_x, VOC, and CO emissions due to the increase in startup/shutdown time per year and the greater hourly emissions during startup/shutdown operations; however, annual hours of operation may be decreased in order for there to be no net emissions increase. In addition, the CO emission rate during shutdown is expected to be less than estimated during the original engineering evaluation for there to be no net emissions increase.

3.1.1 NO_x Emissions

The proposed modifications have been developed to maintain and not increase annual NO_x emissions above the existing Facility Permit I298.x conditions to hold 30,110 pounds of NO_x Regional Clean Air Incentives Market (RECLAIM) Trading Credits (RTCs) valid during each compliance year. This approach has been developed to avoid an emissions increase in accordance with Rule 2005(d) – RECLAIM New Source Review.

Sentinel proposes to increase the number of startups per year while complying with existing annual limits by reducing the overall hours of normal operation. South Coast Air Quality Management District (SCAQMD) engineering records indicate that the turbines were originally permitted based on a total of 2,803 hours per year, which included 300 startups at 25 minutes each and 300 shutdowns at 10 minutes each (175 hours total), and the balance (2,628 hours) at normal operation. To increase the annual number of startups and shutdowns to 410 (239.17 hours total), Sentinel intends to reduce total normal operations to comply with annual RTC holding requirements, which is expected to limit annual normal operations to approximately 2,201 hours (~16.2% reduction).

3.1.2 CO and VOC Emissions

Because the approach to increasing the permitted number of startups per year was developed to maintain compliance with the existing NO_x RTC holding conditions, this modification may result in changes to VOC and CO emissions.

Annual emissions of VOC and CO were calculated based on 2,201 normal hours of operation per year instead of the 2,628 hours per year as originally permitted for each turbine (see SCAQMD engineering records for A/N 472140). Due to the reduced normal annual hours of operation, the annual VOC emissions are expected to decrease. For CO, a mass emission rate of 171.82 lbs/shutdown is used. This results in a decrease in CO emissions from the current shutdown mass emissions but is well within the actual shutdown emissions.

Sentinel's permit does not currently include a mass emission limit for VOC or CO during startup hours or an annual mass emission limit (pounds per year); therefore, no change to a permit condition is proposed based on the annual start-up increase.

3.1.3 Summary of Emission Calculations

The proposed modification only affects annual emissions because direct monthly emission limits fully account for the annual increase in startups requested (originally permitted with two starts per day). The emission calculations are summarized in Table 3-1 and shown in detail in Appendix C.

Table 3-1: Annual Emission Changes for One Turbine

Pollutant	Annual Change (lbs/year)
NO_x	No Change
CO	No Change
VOC	-150

3.2 Black Start Capability

The battery energy storage system will be designed to enable black start capabilities on any of the turbines to support emergency recovery of the electrical grid from a regional blackout event.

Sentinel is proposing to continue to operate in accordance with the same daily and hourly start-up emissions as was evaluated during initial permitting. The black start operations will require operation of a gas turbine at FSNL or low loads for an extended period (more than 1 hour) when emission controls may not be operable or achieving optimal control efficiencies, possibly resulting in emission concentrations for NO_x, CO, and VOC that are in excess of the currently permitted BACT concentration limits for normal operations. Sentinel is requesting that these BACT concentrations not be enforceable during black start operations.

For SO_x and PM_{10}, since emissions are fuel-based with similar emissions at different loads and the existing fuel limits (C1.1 and C1.6) will not increase, the proposed black start operations are not expected to result in an increase in emissions of SO_x or PM_{10}.

Mass emission limits are proposed only for black start operations from the gas turbines using battery power. The addition of black start capability will not affect the normal operation of the gas turbines and normal operations will remain subject to the existing BACT requirements

specified in the facility's permit conditions. As a result, there will be no increase in hourly, daily, monthly, or annual emissions from the proposed black start operations.

The proposed black start mass emission limits are shown in Table 3-2 and it includes both start-up hourly and daily emission limits that would be allowed during black start operations.

Table 3-2: Black Start BACT Emission Limits

Parameter	Proposed BACT Limit for Black Start Operations	Applies To
SU+NO Combined NO_x Emission Rate (lb/hr)	29.54	Black Start Emergency Event, Commissioning, and Routine Testing
SU+NO Combined CO Emission Rate (lb/hr)	20.40	Black Start Emergency Event, Commissioning, and Routine Testing
SU+NO Combined VOC Emission Rate (lb/hr)	5.59	Black Start Emergency Event, Commissioning, and Routine Testing
Daily NO_x Emissions Rate (lb/day)	180.25	Black Start Emergency Event and Routine Testing
Daily CO Emission Rate (lb/day)	215.55	Black Start Emergency Event and Routine Testing
Daily VOC Emission Rate (lb/day)	47.58	Black Start Emergency Event and Routine Testing
Commissioning NO_x Emissions (lb)	1,889.28	Commissioning
Commissioning CO Emission (lb)	1,305.55	Commissioning
Commissioning VOC Emission (lb)	357.71	Commissioning

Sentinel will also require a brief period of testing after installation of the battery system. This black start performance testing and adjustment activities may be required at FSNL or low loads; however, there will be no proposed increase in annual emissions from black start testing operations. Commissioning emissions will last no more than 64 hours and will not exceed the hourly BACT emission limits for black start operations. In addition, periodic testing will also be required approximately one hour every three years and those activities would also comply with the BACT emission limits for black start operations described above.

4.0 RULE COMPLIANCE EVALUATION

This section provides a review of the applicable requirements and describes how the equipment and emissions will comply with applicable standards.

4.1 Regulation II – Permits; Rule 212 – Standards for Approving Permits and Issuing Public Notice

Rule 212(c) requires public notice for:

- (c)(1). A project requesting installation of a new source or modification of an existing source if the source is location within 1,000 feet of the outer boundary of a school;[1] or
- (c)(2). A project resulting in a new or modified facility with on-site emission increases exceeding any of the daily maximums from Rule 212(g); or
- (c)(3). A project requesting installation of a new source or modification of an existing source if the emission increases result in exposure to Maximum Individual Cancer Risk (MICR) greater than or equal to the applicable thresholds in (c)(3)(A) or substances that pose a potential risk of nuisance.

The project sources are not located within 1,000 feet of the outer boundary of a school. Therefore, Rule 212(c)(1) does not apply.

This project does not propose an increase to daily emissions. Rule 212(c)(2) does not apply.

This project does not propose an increase to annual fuel usage. There will be no corresponding increase to annual emissions of air toxics. Rule 212(c)(3) does not apply.

This project is not expected to require a Rule 212 public notice.

4.2 Regulation III – Fees; Rule 301 – Permit Fees

The application processing fees were determined using Rule 301 and are summarized in Table 4-1. The applicant is requesting expedited permit processing; additional fees are provided in accordance with Rule 301(v). A check for the total fee of $171,882.77 is included with the application package.

[1] Defined in Section 42301.9(a) of the California Health & Safety Code as "any public or private school used for purposes of the education of more than 12 children in kindergarten or any grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes."

Table 4-1: Application Processing Fees

Equipment	Rule 301 Table IA/IB Description	Schedule	Requested Permit Action	Fee
Gas Turbine No. 1; Device ID No. D1 (A/N 472139)	Gas Turbine, > 50 MW, other fuel	G	Alteration/Modification; Title V; RECLAIM; FY2020-21	$23,684.83
Gas Turbine No. 2; Device ID No. D7 (A/N 472141)	Gas Turbine, > 50 MW, other fuel	G Identical Equipment Discount	Alteration/Modification; Title V; RECLAIM; FY2020-21; Identical Equipment Discount	$11,842.42
Gas Turbine No. 3; Device ID No. D13 (A/N 472143)	Gas Turbine, > 50 MW, other fuel	G Identical Equipment Discount	Alteration/Modification; Title V; RECLAIM; FY2020-21; Identical Equipment Discount	$11,842.42
Gas Turbine No. 4; Device ID No. D19 (A/N 472147)	Gas Turbine, > 50 MW, other fuel	G Identical Equipment Discount	Alteration/Modification; Title V; RECLAIM; FY2020-21; Identical Equipment Discount	$11,842.42
Gas Turbine No. 5; Device ID No. D25 (A/N 472150)	Gas Turbine, > 50 MW, other fuel	G Identical Equipment Discount	Alteration/Modification; Title V; RECLAIM; FY2020-21; Identical Equipment Discount	$11,842.42
Gas Turbine No. 6; Device ID No. D31 (A/N 472154)	Gas Turbine, > 50 MW, other fuel	G Identical Equipment Discount	Alteration/Modification; Title V; RECLAIM; FY2020-21; Identical Equipment Discount	$11,842.42
Gas Turbine No. 7; Device ID No. D37 (A/N 472156)	Gas Turbine, > 50 MW, other fuel	G Identical Equipment Discount	Alteration/Modification; Title V; RECLAIM; FY2020-21; Identical Equipment Discount	$11,842.42
Gas Turbine No. 8; Device ID No. D43 (A/N 472158)	Gas Turbine, > 50 MW, other fuel	G Identical Equipment Discount	Alteration/Modification; Title V; RECLAIM; FY2020-21; Identical Equipment Discount	$11,842.42
Black Start Megapack Island	Rule 301(c)(1)(A)(iii)	C	New Construction; Title V; RECLAIM; FY2020-21	$6,104.08
			Subtotal	**$112,685.85**
			Expedited Permit Processing – 301(v)	$56,342.93
			RECLAIM & Title V Facility Permit Amendment Fee – 301, Table VII	$2,853.99
			Total	**$171,882.77**

4.3 Regulation IV – Prohibitions

4.3.1 Rule 401 – Visible Emissions

Operation of the facility is not expected to result in visible emissions to the atmosphere. Compliance is expected.

4.3.2 Rule 402 – Nuisance

This project will result in additional operational flexibility for the SCGTs. This is not expected to result in a nuisance to the public. Compliance is expected.

4.4 Regulation XI – Source-Specific Standards; Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities

The purpose of this rule is to reduce emissions of NO_x from electric generating units at electricity generating facilities. Sentinel is subject to Rule 1135.

The November 2, 2018, version of the rule requires RECLAIM facilities to comply with the emission limits on Table 1 of the rule by January 1, 2024, or when required by a Permit to Operate issued to effectuate the emission limits, whichever occurs first.

The black start operations will take place at a period of time prior to the initiation of fuel flow but continue until prior to the generating unit generating electricity for sale over the grid for power distribution; therefore, the proposed black start operation will be within the start-up provisions of the rule and not be subject to the emissions standards. This would also apply during commissioning and reliability testing.

Sentinel's SCGTs comply with the emission limits from Table 1 of the rule during normal operations. No action is required with respect to the emission limits.

4.5 Regulation XIII – New Source Review

The purpose of this regulation is to achieve no net increases from new or modified permitted sources of nonattainment air contaminants or their precursors. In addition to nonattainment air contaminants, this regulation will also limit emission increases of ammonia.

Per Rule 1306(a) and (b), Regulation XIII applicability is based on increases to daily emissions or monthly emissions. The proposed modification to increase the annual number of starts will not affect the maximum daily emissions of any pollutant because the initial permitting accounted for up to two startups and shutdowns per day. Therefore, Best Available Control Technology (BACT) does not apply to this permitting action because daily maximum potential mass emissions do not increase. This project does not require a review of Regulation XIII since changes to daily and monthly emissions for the non-RECLAIM pollutants are not proposed.

In regard to the black start operations, there are two existing battery powered black start projects in the state, both in the Bay Area Air Quality Management District (BAAQMD): Russell City Energy Company, LLC and Marsh Landing Generating Station. In both projects, BACT was determined by BAAQMD to be the use of battery power for black starts and best work practices. These BACT determinations by BAAQMD focused on the operations associated with the black start capability, which included commissioning activities for the black start capability and black start emergency operations. Normal operations continued to be subject to the existing BACT requirements specified in the facility's permit conditions.

Sentinel is proposing to continue to operate in accordance with the same daily and start-up hourly emissions as was evaluated during initial permitting. Although the black start capability could require operation of a gas turbine at FSNL or low loads for an extended period when emissions controls will not be operable or achieving optimal control efficiencies, possibly resulting in emission concentrations that are in excess of the currently permitted concentration limits for normal operations, Sentinel will continue to meet hourly mass emissions limits during black start operations.

As a result, mass emission limits are proposed only for black start operations from the gas turbines using battery power. The proposed black start mass emission limits are shown in Table 3-2 above.

The addition of black start capability will not affect the normal operation of the gas turbines and normal operations will remain subject to the existing BACT requirements specified in the facility's permit conditions. Furthermore, Sentinel will use battery power for black starts and will follow best work practices.

Lastly, there will be no proposed increase in annual emissions from black start operations. As a result, there will be no increase in hourly, daily, monthly, or annual emissions from the proposed black start operations. This project does not require further review of Regulation XIII.

4.6 Regulation XIV – Toxics and Other Non-Criteria Pollutants; Rule 1401 – New Source Review for Air Toxics

This rule specifies limits for MICR, cancer burden, and non-cancer acute and chronic hazard indices (HIs) from new permit units, relocations, or modifications to existing permit units which emit Toxic Air Contaminants (TACs) listed in Table I of the rule. The rule establishes allowable risks for permit units requiring new permits pursuant to Rules 201 or 203.

This project does not propose increases to operating hours. Further evaluation of Rule 1401 is not required since the project will not result in changes to fuel usage/TAC emissions.

4.7 Regulation XVII – Prevention of Significant Deterioration

The purpose of this regulation is to establish preconstruction review requirements for stationary sources to ensure that air quality in clean air areas does not significantly deteriorate while maintaining a margin for future industrial growth.

A Major Stationary Source is a stationary source that falls under one of the listed source categories from Rule 1702(m)(1) and has the potential to emit 100 tons per year or more of any air contaminant regulated by the Clean Air Act (CAA), or a stationary source that does not fall under one of the listed source categories from Rule 1702(m)(1) and has the potential to emit 250 tons per year or more of any air contaminant regulated by the CAA. Rule 1702(m)(1) lists "fossil fuel-fired steam electric plants of more than 250 MMBtu per hour input" and "fossil fuel boilers (or combinations thereof) totaling more than 250 MMBtu per hour heat input." Sentinel operates SCGTs. SCGTs are not "steam electric plants" as there is no steam turbine and are no boilers; therefore, the potential to emit threshold for Prevention of Significant Deterioration applicability is 250 tons per year or more.

There will be no increase in hourly, daily, monthly, or annual emissions from the proposed project.

This project is not expected to require further evaluation of Regulation XVII as Sentinel is not currently a Major Stationary Source and will not become a Major Stationary Source after the Facility Permit is amended.

4.8 Regulation XX – RECLAIM

Sentinel is in the NO_x RECLAIM program. This project is not proposing any changes to the hourly or annual emissions that would impact the existing RTC Holding requirements in accordance with I298.x permit conditions. Per Appendix C, this project is not expected to result in an increase in hourly or annual NO_x emissions and will not change Sentinel's requirements under the RECLAIM program. A detailed evaluation of RECLAIM requirements is not necessary.

4.9 Regulation XXX – Title V Permits

Sentinel is in the Title V program. The SCAQMD implements the Title V program under Regulation XXX. Regulation XXX defines permit application and issuance procedures, as well as compliance requirements associated with the program.

Sentinel anticipates this application to be processed as a Minor Permit Revision. Per Rule 3005(c)(2), Sentinel requests that within 45 days of this application being deemed complete, the revised permit be sent to the U.S. EPA for a 45-day review. Table 4-2 provides demonstration that this project meets the requirements for Minor Permit Revision as stated in Rule 3000(b)(15).

4.10 California Environmental Quality Act (CEQA)

A Form 400-CEQA is provided as an attachment to this application.

5.0 PERMIT WORDING AND CONDITIONS

5.1 Proposed Permit Wording

5.2 Conditions

Sentinel suggests the following changes to the permit conditions (~~deletions~~ **additions**).

The requested change to Conditions A99.3, A99.9, A99.10, and A433.1 reflects the updated annual start-up limit and proposed black start operations.

A99.3 The 4 PPM CO emission limit(s) shall not apply during turbine start-up, ~~and~~ shutdown**, commission activities for black start capability, periodic testing for black start capability, or black start emergency operations**~~periods~~. Start-up time shall not exceed 25 minutes for each start-up. Shutdown periods shall not exceed 10 minutes for each shutdown. The turbine shall be limited to a maximum of ~~300~~ **410** start-ups per year. Written records of start-ups ~~and~~ shutdowns shall be maintained and made available upon request from the Executive Officer.

For the purposes of this condition, start-up shall be defined as the start-up process to bring the turbine in full successful operations. If during start-up the process is aborted and the start-up is restarted, then the start-up and restart is defined as "one start-up". In this case the start-up time shall not exceed one hour.

[**RULE 1703(a)(2)- PSD-BACT, 10-7-1988**]

[Devices subject to this condition: Dl, D7, D13, D19, D25, D31, D37, D43]

A99.9 The 2.0 PPM ROG emission limit(s) shall not apply during turbine start-up, ~~and~~ shutdown**, commission activities for black start capability, periodic testing for black start capability, or black start emergency operations**~~periods~~. Start-up time shall not exceed 25 minutes for each start-up. Shutdown periods shall not exceed 10 minutes for each shutdown. The turbine shall be limited to a maximum of ~~300~~ **410** start-ups per year. Written records of start-ups ~~and~~ shutdowns shall be maintained and made available upon request from the Executive Officer.

For the purposes of this condition, start-up shall be defined as the start-up process to bring the turbine in full successful operations. If during start-up the process is aborted and the start-up is restarted, then the start-up and restart is defined as "one start-up". In this case the start-up time shall not exceed one hour.

[**RULE 1303(a)(l)-BACT, 5-10-1996;** RULE 1303(a)(l)-BACT, 12-6-2002]

[Devices subject to this condition: Dl, D7, D13, D19, D25, D31, D37, D43]

A99.10 The 2.5 PPM NOx emission limit(s) shall not apply during turbine start-up, ~~and~~ shutdown**, commission activities for black start capability, periodic testing for black start capability, or black start emergency operations**~~periods~~ s. Start-up time shall not exceed 25 minutes for each start-up. Shutdown periods

shall not exceed 10 minutes for each shutdown. The turbine shall be limited to a maximum of ~~300~~ **410** start-ups per year. Written records of start-ups and shutdowns shall be maintained and made available upon request from the Executive Officer.

For the purposes of this condition, start-up shall be defined as the start-up process to bring the turbine in full successful operations. If during start-up the process is aborted and the start-up is restarted, then the start-up and restart is defined as "one start-up". In this case the start-up time shall not exceed one hour. The NOx emissions limited to 29.54 pounds per hour as listed in condition A433.1

The operator shall keep records of aborted turbine start-ups and make the records available to District personnel upon request.

[**RULE 1703(a)(2)- PSD-BACT, 10-7-1988**]

[Devices subject to this condition: Dl, D7, D13, D19, D25, D31, D37, D43]

A433.1 The operator shall comply at all times with the 2.5 ppm 1-hour BACT limit for NOx, except as defined in condition A99.l and for the following scenario:

Operating Scenario	Maximum Hourly Emissions Limit	Operational Limit
Start-up hour	29.54	NOx emissions not to exceed 29.54 lbs total per start-up per turbine. Each turbine shall be limited to ~~300~~ **410** start-ups per year, with each start-up not to exceed 25 minutes.

[RULE 1703(a)(2)-PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011]

[Devices subject to this condition: Dl, D7, Dl3, D19, Df5, D31, D37, D43]

Proposed new conditions for black start operations.

A433.2 The operator shall comply with the following NOx BACT limits for black start operations:

Operating Scenario	Maximum Hourly Emissions Limit	Maximum Emissions Limit	Operational Limit
Emergency Black Start Operations	29.54	180.25 lb/day	NOx emissions not to exceed 29.54 lbs per hour and 180.25 lbs per day during emergency black start operations per turbine.
Commissioning Activities for Black Start Capability	29.54	1,889.28 Lbs/64-hour Commissioning Period	NOx emissions not to exceed 29.54 lbs per hour and 1,889.28 Lbs per 64-hour commissioning period during commissioning activities for black start operations per turbine.
Periodic Testing Activities for Black Start Capability	29.54	180.25 lb/day	NOx emissions not to exceed 29.54 lbs per hour and 180.25 lbs per day during periodic testing for black start operations per turbine.

[RULE 1703(a)(2)-PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011]

[Devices subject to this condition: Dl, D7, Dl3, D19, D25, D31, D37, D43]

APPENDIX A – APPLICATION FORMS

Form and Title	Equipment	Permit Action
400-A – Application for Permit or Plan Approval	Gas Turbine No. 1; Device ID No. D1 (A/N 472139)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 2; Device ID No. D7 (A/N 472141)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 3; Device ID No. D13 (A/N 472143)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 4; Device ID No. D19 (A/N 472147)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 5; Device ID No. D25 (A/N 472150)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 6; Device ID No. D31 (A/N 472154)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 7; Device ID No. D37 (A/N 472156)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Gas Turbine No. 8; Device ID No. D43 (A/N 472158)	Alteration/Modification
400-A – Application for Permit or Plan Approval	Black Start Megapack Island	New Construction
400-A – Application for Permit or Plan Approval	RECLAIM/ Title V Permit	RECLAIM/Title V Facility Permit Amendment
400-XPP – Express Permit Processing Request	Project	Permit Processing
400-CEQA – California Environmental Quality Act Applicability	Project	Permit Processing
500-C1 – Compliance Status Report	Project	RECLAIM/Title V Facility Permit Amendment
500-F1 (Title V) – Title IV – Acid Rain Phase II Facility Information Summary	Project	RECLAIM/Title V Facility Permit Amendment
500-A2 – Title V Application Certification	Project	RECLAIM/Title V Facility Permit Amendment

A printout from the SCAQMD fee calculator is also included.

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 152707

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

15775 Melissa Lane
Street Address

North Palm Springs , CA 92258
City Zip

David Wells — EHS Coordinator
Contact Name — Title

(760) 288-7901 — Ext. — Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O Box 1328
Address

Desert Hot Springs , CA 92240
City State Zip

David Wells — EHS Coordinator
Contact Name — Title

(760) 288-7901 — Ext. — Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 472139

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Increase to Annual Start-ups and Add Blackstart for CTG-1

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 7

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Power generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? (●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Plant Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Dennis Johnson

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
152707

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

15775 Melissa Lane
Street Address

North Palm Springs , CA 92258
City Zip

David Wells EHS Coordinator
Contact Name Title

(760) 288-7901
Phone # Ext. Fax #

E-Mail: D.Wells@dgc-ops.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O Box 1328
Address

Desert Hot Springs , CA 92240
City State Zip

David Wells EHS Coordinator
Contact Name Title

(760) 288-7901
Phone # Ext. Fax #

E-Mail: D.Wells@dgc-ops.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:
472141

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Increase to Annual Start-ups and Add Blackstart for CTG-2

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process)
7

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center)
(●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? If Yes, provide NOV/NC#:
(●) No ( ) Yes

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Power generation

14. What is your business primary NAICS Code? (North American Industrial Classification System)
221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator?
( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line?
(●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Plant Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.)
( ) No (●) Yes

20. Print Name:
Dennis Johnson

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.)
(●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 152707

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

15775 Melissa Lane
Street Address

North Palm Springs , CA 92258
City Zip

David Wells — EHS Coordinator
Contact Name — Title

(760) 288-7901 — Ext. — Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O Box 1328
Address

Desert Hot Springs , CA 92240
City State Zip

David Wells — EHS Coordinator
Contact Name — Title

(760) 288-7901 — Ext. — Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 472143

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Increase to Annual Start-ups and Add Blackstart for CTG-3

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 7

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Power generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? (●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Plant Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Dennis Johnson

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 152707

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

15775 Melissa Lane
Street Address

North Palm Springs , CA 92258
City Zip

David Wells EHS Coordinator
Contact Name Title

(760) 288-7901
Phone # Ext. Fax #

E-Mail: D.Wells@dgc-ops.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O Box 1328
Address

Desert Hot Springs , CA 92240
City State Zip

David Wells EHS Coordinator
Contact Name Title

(760) 288-7901
Phone # Ext. Fax #

E-Mail: D.Wells@dgc-ops.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 472147

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Increase to Annual Start-ups and Add Blackstart for CTG-4

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 7

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Power generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? (●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Plant Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Dennis Johnson

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
152707

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

15775 Melissa Lane
Street Address

North Palm Springs , CA 92258
City Zip

David Wells | EHS Coordinator
Contact Name | Title

(760) 288-7901 | Ext. | Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O Box 1328
Address

Desert Hot Springs , CA 92240
City State Zip

David Wells | EHS Coordinator
Contact Name | Title

(760) 288-7901 | Ext. | Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:
472150

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Increase to Annual Start-ups and Add Blackstart for CTG-5

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process)
7

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center)
(●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? If Yes, provide NOV/NC#:
(●) No ( ) Yes

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Power generation

14. What is your business primary NAICS Code? (North American Industrial Classification System)
221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator?
( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line?
(●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Plant Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.)
( ) No (●) Yes

20. Print Name:
Dennis Johnson

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.)
(●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 152707

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

15775 Melissa Lane
Street Address

North Palm Springs , CA 92258
City Zip

David Wells — EHS Coordinator
Contact Name — Title

(760) 288-7901 — Ext. — Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O Box 1328
Address

Desert Hot Springs , CA 92240
City State Zip

David Wells — EHS Coordinator
Contact Name — Title

(760) 288-7901 — Ext. — Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 472154

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Increase to Annual Start-ups and Add Blackstart for CTG-6

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 7

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Power generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? (●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Plant Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Dennis Johnson

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 152707

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

15775 Melissa Lane
Street Address

North Palm Springs , CA 92258
City Zip

David Wells — EHS Coordinator
Contact Name — Title

(760) 288-7901 — Ext. — Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O Box 1328
Address

Desert Hot Springs , CA 92240
City State Zip

David Wells — EHS Coordinator
Contact Name — Title

(760) 288-7901 — Ext. — Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 472156

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Increase to Annual Start-ups and Add Blackstart for CTG-7

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 7

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Power generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? (●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Plant Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Dennis Johnson

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 152707

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

15775 Melissa Lane
Street Address

North Palm Springs , CA 92258
City Zip

David Wells | EHS Coordinator
Contact Name | Title

(760) 288-7901 | Ext. | Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O Box 1328
Address

Desert Hot Springs , CA 92240
City State Zip

David Wells | EHS Coordinator
Contact Name | Title

(760) 288-7901 | Ext. | Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 472158

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Increase to Annual Start-ups and Add Blackstart for CTG-8

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 7

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Power generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? (●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Plant Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Dennis Johnson

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
152707

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

15775 Melissa Lane
Street Address

North Palm Springs , CA 92258
City Zip

David Wells — EHS Coordinator
Contact Name — Title

(760) 288-7901 — Ext. — Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O Box 1328
Address

Desert Hot Springs , CA 92240
City State Zip

David Wells — EHS Coordinator
Contact Name — Title

(760) 288-7901 — Ext. — Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- (●) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- ( ) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Black Start Megapack Island

10. For Identical equipment, how many additional applications are being submitted with this application?
(Form 400-A required for each equipment / process)
0

11. Are you a Small Business as per AQMD's Rule 102 definition?
(10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center)
(●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment?
(●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Power generation

14. What is your business primary NAICS Code?
(North American Industrial Classification System)
221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator?
( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line?
(●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Plant Manager

19. I wish to review the permit prior to issuance.
(This may cause a delay in the application process.)
( ) No (●) Yes

20. Print Name:
Dennis Johnson

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.)
(●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 152707

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

15775 Melissa Lane
Street Address

North Palm Springs , CA 92258
City Zip

David Wells EHS Coordinator
Contact Name Title

(760) 288-7901 Ext. Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O Box 1328
Address

Desert Hot Springs , CA 92240
City State Zip

David Wells EHS Coordinator
Contact Name Title

(760) 288-7901 Ext. Fax #
Phone #

E-Mail: D.Wells@dgc-ops.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- (●) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- ( ) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
RECLAIM/Title V Facility Permit Amendment

10. For Identical equipment, how many additional applications are being submitted with this application?
(Form 400-A required for each equipment / process)

11. Are you a Small Business as per AQMD's Rule 102 definition?
(10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Power generation

14. What is your business primary NAICS Code?
(North American Industrial Classification System) 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? (●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Plant Manager

19. I wish to review the permit prior to issuance.
(This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Dennis Johnson

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400 - XPP

Express Permit Processing Request

Form 400-A, Form 400-CEQA and one or more 400-E-xx form(s) must accompany all submittals.

Mail To:
SCAQMD
P.O Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator To Appear On The Permit): Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 152707

Section B - Equipment Location Address

3. (●) **Fixed Location** ( ) **Various Location**
(For equipment operated at various locations, provide address of initial site.)

15775 Melissa Lane
Street Address

North Palm Springs, **CA** 92258
City State Zip

David Wells | EHS Coordinator
Contact Name | Title

(760) 288-7901 | |
Phone # | Ext. | Fax #

D.Wells@dgc-ops.com
E-Mail

Section C - Permit Mailing Address

4. Permit and Correspondence Information:
☐ Check here if same as equipment location address

P.O Box 1328
Address

Desert Hot Springs, CA 92240
City State Zip

David Wells | EHS Coordinator
Contact Name | Title

(760) 288-7901 | |
Phone # | Ext. | Fax #

D.Wells@dgc-ops.com
E-Mail

Section D - Authorization/Signature

I understand that the Expedited Permit Processing fees must be submitted at the time of application submittal, and that the application may be subject to additional fees per Rule 301. I understand that requests for Express Permit Processing neither guarantees action by any specific date nor does it guarantee permit approval; that Express Permit Processing is subject to availability of qualified staff; and that once Express Permit Processing has commenced, the expedited fees will not be refunded. I hereby certify that all information contained herein and information submitted with the application are true and correct.

5. Signature of Responsible Official:	6. Title of Responsible Official: Plant Manager
7. Print Name of Responsible Official: Dennis Johnson	8. Date:
9. Phone #: (760) 288-7901	10. Fax #:

AQMD USE ONLY	APPLICATION TRACKING #		TYPE B C	EQUIPMENT CATEGORY CODE:	FEE SCHEDULE: $		VALIDATION
ENG. DATE A R	ENG. DATE A R		CLASS I III	ASSIGNMENT Unit Engineer	CHECK/MONEY ORDER #	AMOUNT $	TRACKING #

South Coast Air Quality Management District

Form 400-CEQA
California Environmental Quality Act (CEQA) Applicability

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project [1] has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines § 15060(a)]. Form 400-CEQA and the instructions for guidance on completing this form are available at http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms or http://www.aqmd.gov/home/permits/permit-application-forms. For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project at the same time, only one Form 400-CEQA is necessary for the entire project. If you need assistance completing this form, contact Permit Services at (909) 396-3385.

Section A – Facility Information

1. Facility Name (Business Name of Operator to Appear on the Permit): Sentinel Energy Center, LLC

2. SCAQMD Facility ID: 152707

3. Project Description: Increase Annual Start-ups for All Eight (8) Units and Add Blackstart at Facility

Section B – Review For Exemption From Further CEQA Action

Check "Yes" or "No" as applicable. If "Yes" is checked for any question in Section B, skip Section C and proceed to page 2 and complete Section D - Signatures.

	Yes	No	Is this application for:
1.	○	◉	**A request for a change of operator only (without equipment or process change modifications)?**
2.	○	◉	**A functionally identical permit unit replacement with no increase in equipment unit rating or emissions?**
3.	○	◉	**A change of daily VOC permit limit to a monthly VOC permit limit?**
4.	○	◉	**Equipment damaged as a result of a disaster during state of emergency?**
5.	○	◉	**A Title V** (e.g., SCAQMD Regulation XXX) **permit renewal without equipment or process change modifications?**
6.	○	◉	**A Title V administrative permit revision?**
7.	○	◉	**The conversion of an existing permit into an initial Title V permit?**

Section C – Review of Impacts Which May Trigger Further CEQA Review

Check "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.

	Yes	No	
1.	○	◉	**Is this project specifically evaluated in a previously certified or adopted CEQA document?** If "Yes" is checked, attach a copy of the signed Notice of Determination to this form.
2.	○	◉	**Is this project specifically exempted from CEQA by another entity (e.g., city or agency)?** If "Yes" is checked, attach a copy of the signed Notice of Exemption or other documentation from the entity to this form.
3.	○	◉	**Is this project part of a larger project?** If "Yes" is checked, attach a separate sheet to briefly describe the larger project.
4.	○	◉	**Will the project increase the QUANTITY of hazardous materials stored aboveground onsite or transported by mobile vehicle to or from the site by greater than or equal to the amounts associated with each compound listed on Form 400-CEQA, Table 1 - Regulated Substances List and Threshold Quantities for Accidental Release Prevention** [http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms]**?** If "Yes" is checked, attach a separate sheet to identify each hazardous material and corresponding quantity to be transported, stored, or used.
5.	○	◉	**Will the project emit any air toxic listed on Form 400-CEQA, Table 2 - Other Air Toxics and Their Screening Levels** [http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms] [2]**?** If "Yes" is checked, attach a separate sheet to identify each air toxic and corresponding quantity to be emitted.
6.	○	◉	**Will the project require any demolition, excavation, and/or grading construction activities that encompass an area exceeding 20,000 square feet?**

[1] A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc

[2] Form 400-CEQA, Table 2 – Other Air Toxics and Their Screening Levels, contains a list of air toxics that either do not have a cancer potency (CP) or reference exposure level (REL) approved by the Office of Environmental Health Hazards Assessment (OEHHA) or have a combination of OEHHA-approved and non-approved CPs or RELs.

Section C – Review of Impacts Which May Trigger Further CEQA (concluded)			
	Yes	No	
7.	○	⊙	**Will the project utilize a boiler, engine, or other combustion equipment that uses fuel (e.g., gasoline, diesel, natural gas, liquefied petroleum gas (LPG), or landfill gas)?** If "Yes" is checked, then the applicant will need to calculate the amount of GHGs from fuel use via on the Greenhouse Gas (GHG) online estimator [http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms], and attaching the printout or by conducting hand calculations and providing the documentation. Refer to the Instructions for Form 400-CEQA for guidance.
8.	○	⊙	**Will the project utilize other types of equipment not addressed in Question 7 that require the use of, or will generate, any chemicals listed on Form 400-CEQA, Table 3 - Greenhouse Gases** [http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms]**?** If "Yes" is checked, attach a separate sheet to identify each equipment unit, the chemical name(s), and the quantity of each chemical identified.
9.	○	⊙	**Will the project include the open outdoor storage of dry bulk solid materials that could generate dust?** If "Yes" is checked, include a plot plan with the application package.
10.	○	⊙	**Will the project result in or make worse noticeable off-site odors from activities that may not be subject to SCAQMD permit requirements?** For example, landfills, materials recovery/recycling facilities (MRF), and compost materials or other types of greenwaste (e.g., lawn clippings, tree trimmings, etc.) have the potential to generate odor complaints subject to SCAQMD Rule 402 – Nuisance.
11.	○	⊙	**Will the project cause an increase of emissions from marine vessels, trains and/or airplanes?**
12.	○	⊙	**Will the project increase demand for potable water at the facility by more than 262,820 gallons per day?** The following examples identify some, but not all, types of projects that may result in a "Yes" answer to this question: 1) a project that generates steam; 2) a project that uses water as part of operating air pollution control equipment; 3) a project that requires water as part of the production process; 4) a project that requires a new, or the expansion of an existing, sewage treatment facility, new water lines, sewage lines, sewage hook-ups etc.; 5) a project where the water demand exceeds the capacity of the local water purveyor to supply sufficient water for the project; 6) a project that requires new or the expansion of existing, water supply and conveyance facilities; and, 7) a project that requires water to hydrotest pipelines, storage tanks etc. for structural integrity.
13.	○	⊙	**Will the project create an increase in the mass inflow of effluents to a public wastewater treatment facility that would require a new, or revision to an existing, National Pollutant Discharge Elimination System (NPDES) or other related permit at the facility?**
14.	○	⊙	**Will the project result in the need for more than 350 new employees?**
15.	○	⊙	**Will the project result in an increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round-trips per day?**
16.	○	⊙	**Will the project result in an increase in customer traffic by more than 700 visits per day?**
17.	○	⊙	**Will the project result in temporary or permanent noise or vibration in excess of what is allowed by the applicable local noise ordinance?**
18.	○	⊙	**Will the project create a permanent need for new or additional solid waste disposal?** Check "No" if the projected potential amount of solid waste to be generated by the project is less than five tons per day.
19.	○	⊙	**Will the project create a permanent need for new or additional hazardous waste disposal?** Check "No" if the projected potential amount of hazardous wastes to be generated by the project is less than 42 cubic yards per day (or equivalent in pounds).
20.	○	⊙	**Will the project include equipment that after installation or modification will change the visual character of the site and its surroundings or block views?**
21.	○	⊙	**Will the project have equipment that will create a new source of external lighting that will be visible at the property line?**

Section D – SIGNATURES

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND THAT THIS FORM IS A SCREENING TOOL AND THAT THE SCAQMD RESERVES THE RIGHT TO CONSIDER OTHER PERTINENT INFORMATION IN DETERMINING CEQA APPLICABILITY.

1. Signature of Responsible Official of Firm:		2. Title of Responsible Official of Firm: Plant Manager
3. Print Name of Responsible Official of Firm: Dennis Johnson		4. Date Signed:
5. Phone # of Responsible Official of Firm: (760) 288-7901	6. Fax # of Responsible Official of Firm:	7. Email of Responsible Official of Firm: D.Johnson@dgc-ops.com
8. Signature of Preparer, (If prepared by person other than responsible official of firm):		9. Title of Preparer: Senior Scientist, Yorke Engineering, LLC
10. Print Name of Preparer: Eduardo Jimenez		11. Date Signed: 2/3/2022
12. Phone # of Preparer: (949) 392-3059	13. Fax # of Preparer: (949) 248-8499	14. Email of Preparer: EJimenez@YorkeEngr.com

THIS CONCLUDES FORM 400-CEQA. INCLUDE THIS FORM AND ANY ATTACHMENTS WITH FORM 400-A.

South Coast Air Quality Management District

Form 500-C1

Title V Compliance Status Report

To provide the compliance status of your facility with applicable federally enforceable requirements and identify other local-only requirements, complete this form and attach it to a completed compliance certification Form 500-A2. As appropriate, all submittals of Form 500-C2 as appropriate should also be attached to this form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit):
Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
152707

PROCEDURES FOR DETERMINING COMPLIANCE STATUS

1. **Equipment verification:** Review the list of pending applications, and either the preliminary Title V facility permit or the list of current permits to operate that the AQMD provided you, to determine if they completely and accurately describe all equipment operating at the facility. Attach a statement to describe any discrepancies.
2. **Identify applicable requirements*:** Use the checklist in Section II to identify all applicable and federally-enforceable local, state, and federal rules and regulations, test methods, and monitoring, recordkeeping and reporting (MRR) requirements that apply to any equipment or process (including equipment exempt from a permit by Rule 219) at your facility.
   The potential applicable requirements, test methods and MRR requirements are identified and listed adjacent to each given equipment/process description. Check off each box adjacent to the corresponding requirement as it applies to your particular equipment/process.
   Note: Even if there is only one piece of equipment that is subject to a particular requirement, the appropriate box should be checked.
3. **Identify additional applicable requirements*:** Use Section III to identify any additional requirements not found in Section II. Section II is not a complete list of all applicable requirements. It does not include recently adopted NESHAP regulations by EPA or recent amendments to AQMD rules. Do not add rules listed in Section V here.
4. **Identify any requirements that do not apply to a specific piece of equipment or process:** Also use Section III to identify any requirements that are listed in Section II but that do not apply to a specific piece of equipment or process. Fill out Section III of this form and attach a separate sheet to explain the reason(s) why the identified rules do not apply. Note: Listing any requirement that does not apply to a specific piece of equipment will not provide the facility with a permit shield unless one is specifically requested by completing Form 500-D and is approved by AQMD.
5. **Identify SIP-approved rules that are not current AQMD rules:** Use Section IV to identify older versions of current AQMD rules that are the EPA-approved versions in the State Implementation Plan (SIP), and that are still applicable requirements as defined by EPA. The facility is not required to certify compliance with the items checked in Section IV provided that the non-SIP approved rule in Section II is at least as stringent as the older SIP-approved version in Section IV. **
6. **Identify Local-Only Enforceable Regulatory Requirements:** Use Section V to identify AQMD rules that are not SIP-approved and are not federally enforceable.
7. **Determine compliance:** Determine if all equipment and processes are complying with all requirements identified in Sections II and III. If each piece of equipment complies with all applicable requirements, complete and attach Form 500-A2 to certify the compliance status of the facility. If any piece of equipment is not in compliance with any of the applicable requirements, complete and attach Form 500-C2 in addition to Form 500-A2.

* The following AQMD rules and regulations are not required to be included in Section II and do not have to be added to Section III: Regulation I, List and Criteria in Regulation II, Rule 201, Rule 201.1, Rule 202, Rule 203, Rule 205, Rule 206, Rule 207, Rule 208, Rule 209, Rule 210, Rule 212, Rule 214, Rule 215, Rule 216, Rule 217, Rule 219, Rule 220, Rule 221, Regulation III, Regulation V, Regulation VIII, Regulation XII, Regulation XV, Regulation XVI, Regulation XIX, Regulation XXI, Regulation XXII, and Regulation XXX.

** Emission units adversely affected by the gap between current and SIP-approved versions of rules may initially be placed in a non-Title V portion of the permit

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☑ All Air Pollution Control Equipment Using Combustion (RECLAIM & non-RECLAIM sources)	☐ Rule 480 (10/07/77)	N/A	N/A
☐ All Coating Operations (12/15/00)	☐ Rule 442	☐ Rule 442(f)	☐ Rule 442(g)
☐ All Combustion Equipment, ≥ 555 Mmbtu/Hr (except for NOx RECLAIM sources)	☐ Rule 474 (12/04/81)	☐ AQMD TM 7.1 or 100.1	
☑ All Combustion Equipment Except Internal Combustion Engines (RECLAIM & non-RECLAIM sources)	☑ Rule 407 (04/02/82) ☑ Rule 409 (08/07/81)	☑ AQMD TM 100.1 or 10.1, 307-91 ☑ AQMD TM 5.1, 5.2, or 5.3	
☑ All Combustion Equipment Using Gaseous Fuel (except SOx RECLAIM sources)	☑ Rule 431.1 (06/12/98)	☑ Rule 431.1(f)	☑ Rule 431.1(d) & (e)
☑ All Combustion Equipment Using Liquid Fuel (except SOx RECLAIM sources)	☑ Rule 431.2 (09/15/00)	☑ Rule 431.2(g)	☑ Rule 431.2(f)
☐ All Combustion Equipment Using Fossil Fuel (except SOx RECLAIM sources)	☐ Rule 431.3 (05/07/76)		
☑ All Equipment	☑ Rule 401 (11/09/01) ☐ Rule 405 (02/07/86) ☑ Rule 408 (05/07/76) ☑ Rule 430 (07/12/96) ☑ Rule 701 (06/13/97) ☑ New Source Review, BACT ☑ Rule 1703 (10/07/88) ☐ 40 CFR68 - Accidental Release Prevention	☑ California Air Resources Board Visible Emission Evaluation ☐ AQMD TM 5.1, 5.2, or 5.3 N/A See Applicable Subpart	☑ Rule 430(b) See Applicable Subpart
☐ All Equipment Processing Solid Materials	☐ Rule 403 (06/03/05)	☐ Rule 403(d)(3)	☐ Rule 403(f)
☑ All Equipment With Exhaust Stack (except cement kilns subject to Rule 1112.1)	☑ Rule 404 (02/07/86)	☑ AQMD TM 5.1, 5.2, or 5.3	
☑ All Facilities Using Solvents to Clean Various Items or Equipment	☑ Rule 109 (05/02/03) ☑ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART T	☑ Rule 109(g) ☑ Rule 1171(e) See Applicable Subpart	☑ Rule 109(c) ☑ Rule 1171(c)(6) See Applicable Subpart
☑ All RECLAIM Equipment (NOx & SOx)	☑ Reg. XX - RECLAIM	☐ Rule 2011, App. A (05/06/05) ☑ Rule 2012, App. A (05/06/05)	☐ Rule 2011, App. A (05/06/05) ☑ Rule 2012, App. A (05/06/05)
☐ Abrasive Blasting	☐ Rule 1140 (08/02/85)	☐ Rule 1140(d) & (e), AQMD Visible Emission Method	

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Aggregate and Related Operations	☐ Rule 1157 (09/08/06)	☐ Rule 1157(f)	☐ Rule 1157(e)
☐ Appliances Containing Ozone Depleting Substances (except Motor Vehicle Air Conditioners): Manufacturing, Repair, Maintenance, Service, & Disposal	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Asphalt	See Manufacturing, Asphalt Processing & Asphalt Roofing		
☐ Asphalt Concrete/Batch Plants	☐ 40 CFR60 SUBPART I	See Applicable Subpart	See Applicable Subpart
☐ Benzene Emissions, Maleic Anhydride Plants, Ethylbenzene/Styrene Plants, Benzene Storage Vessels, Benzene Equipment Leaks, & Coke By-Product Recovery Plants	☐ Rule 1173 (02/06/09) ☐ Rule 1176 (09/13/96) ☐ 40 CFR61 SUBPART L ☐ 40 CFR61 SUBPART Y ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART CC	☐ Rule 1173(j) ☐ Rule 1176(h) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1173(i) ☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Benzene Transfer Operations	☐ Rule 1142 (07/19/91) ☐ 40 CFR61 SUBPART BB ☐ 40 CFR63 SUBPART Y	☐ Rule 1142(e) See Applicable Subpart See Applicable Subpart	☐ Rule 1142(h) See Applicable Subpart See Applicable Subpart
☐ Benzene Waste Operations	☐ Rule 1176 (09/13/96) ☐ 40 CFR61 SUBPART FF ☐ 40 CFR63 SUBPART CC	☐ Rule 1176(h) See Applicable Subpart See Applicable Subpart	☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart
☐ Beryllium Emissions	☐ 40 CFR61 SUBPART C	See Applicable Subpart	See Applicable Subpart
☐ Beryllium Emissions, Rocket Motor Firing	☐ 40 CFR61 SUBPART D	See Applicable Subpart	See Applicable Subpart
☐ Boiler, < 5 Mmbtu/Hr (non-RECLAIM sources)	☐ Rule 1146.1 (09/05/08) ☐ Rule 1146.2 (05/05/06) ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 1146.1(d) N/A See Applicable Subpart	☐ Rule 1146.1(c)(2) & (c)(3) N/A See Applicable Subpart
☐ Boiler, < 5 Mmbtu/Hr (RECLAIM sources)	☐ Rule 1146.1 (09/05/08) - excluding NOx requirements ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 1146.1(d) See Applicable Subpart	☐ Rule 1146.1(c)(2) & (c)(3) See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Boiler, ≥ 5 Mmbtu/Hr (non-RECLAIM sources)	☐ Rule 218 (05/14/99) ☐ Rule 429 (12/21/90) ☐ Rule 475 (08/07/78) ☐ Rule 476 (10/08/76) ☐ Rule 1146 (09/05/08) ☐ 40 CFR60 SUBPART D ☐ 40 CFR60 SUBPART Da ☐ 40 CFR60 SUBPART Dc ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 100.1 N/A ☐ AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 7.1, 100.1, 5.1, 5.2, or 5.3 ☐ Rule 1146(d) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 218(e) & (f) ☐ Rule 429(d) ☐ Rule 1146(c)(6) & (c)(7) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Boiler, ≥ 5 Mmbtu/Hr (RECLAIM sources)	☐ Rule 475 (08/07/78) ☐ Rule 476 (10/08/76) - excluding NOx requirements ☐ Rule 1146 (09/05/08) - excluding NOx requirements ☐ Rule 2011 (05/06/05) ☐ or Rule 2012 (05/06/05) ☐ 40 CFR60 SUBPART D ☐ 40 CFR60 SUBPART Da ☐ 40 CFR60 SUBPART Dc ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 7.1, 100.1, 5.1, 5.2, or 5.3 ☐ Rule 1146(d) ☐ Rule 2011, App. A (05/06/05) ☐ or Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1146(c)(6) & (c)(7) ☐ Rule 2011, App. A (05/06/05) ☐ or Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Boiler, Petroleum Refining (non-RECLAIM sources)	☐ Rule 218 (05/14/99) ☐ Rule 429 (12/21/90) ☐ Rule 431.1 (06/12/98) ☐ Rule 475 (08/07/78) ☐ Rule 1146 (09/05/08) ☐ 40 CFR60 SUBBPART J ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 100.1 N/A ☐ Rule 431.1(f) ☐ AQMD TM 5.1, 5.2, or 5.3 ☐ Rule 1146(d) See Applicable Subpart See Applicable Subpart	☐ Rule 218(e) & (f) ☐ Rule 429(d) ☐ Rule 431.1(d) & (e) ☐ Rule 1146(c)(6) & (c)(7) See Applicable Subpart See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Boiler, Petroleum Refining (RECLAIM sources)	☐ Rule 1146 (09/05/08) - excluding NOx requirements ☐ Rule 2011 (05/06/05) ☐ or ☐ Rule 2012 (05/06/05) ☐ 40 CFR60 SUBPART J ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 1146(d) ☐ Rule 2011, App. A (05/06/05) ☐ or ☐ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart	☐ Rule 1146(c)(6) & (c)(7) ☐ Rule 2011, App. A (05/06/05) ☐ or ☐ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart
☐ Boilers, Electric Utility (non-RECLAIM sources)	☐ Rule 218 (05/14/99) ☐ Rule 429 (12/21/90) ☐ Rule 1135 (07/19/91) ☐ 40 CFR60 SUBPART Db ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 100.1 N/A ☐ Rule 1135(e) See Applicable Subpart See Applicable Subpart	☐ Rule 218(e) & (f) ☐ Rule 429(d) ☐ Rule 1135(e) See Applicable Subpart See Applicable Subpart
☐ Boilers, Electric Utility (RECLAIM sources)	☐ Rule 2012 (05/06/05) ☐ 40 CFR60 SUBPART Db ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart	☐ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart
☐ Bulk Loading Of Organic Liquids	☐ Rule 462 (05/14/99) ☐ 40 CFR60 SUBPART XX ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART BBBBBB ☐ 40 CFR63 SUBPART EEEE	☐ Rule 462(f) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 462(g) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Cadmium Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Calciner, Mineral Industries	☐ 40 CFR60 SUBPART UUU	See Applicable Subpart	See Applicable Subpart
☐ Calciner, Petroleum Coke	☐ Rule 477 (04/03/81) ☐ Rule 1119 (03/02/79) ☐ 40 CFR63 SUBPART L	☐ AQMD Visible Emissions, AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 6.1 or 100.1 See Applicable Subpart	See Applicable Subpart
☐ Charbroilers	☐ Rule 1174 (10/05/90) ☐ Rule 1138 (11/14/97)	☐ AQMD Test Protocol ☐ Rule 1138(g)	☐ Rule 1138(d)
☐ Chrome Plating & Chromic Acid Anodizing Operation	☐ Rule 1426 (05/02/03) ☐ Rule 1469 (12/05/08)	☐ Rule 1469(e)	☐ Rule 1426(e) ☐ Rule 1469(g), (j) & (k)

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Adhesive Application Operation	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1132 (05/05/06) ☐ Rule 1168 (01/07/05) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART RR	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1132(f) ☐ Rule 1168(f) & (e) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1132(g) ☐ Rule 1168(d) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Aerospace Assembly & Component Manufacturing	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1124 (09/21/01) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART GG	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1124(e) & (f) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1124(j) & (d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Graphic Arts (Gravure, Letter Press, Flexographic & Lithographic Printing Process, Etc.)	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1130 (10/08/99) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART QQ ☐ 40 CFR60 SUBPART RR ☐ 40 CFR60 SUBPART FFF ☐ 40 CFR60 SUBPART VVV ☐ 40 CFR63 SUBPART KK ☐ 40 CFR63 SUBPART JJJJ	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1130(h) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1130(e) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Magnet Wire Coating	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1126 (01/13/95) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09)	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1126(d) ☐ Rule 1132(f) ☐ Rule 1171(e)	☐ Rule 109(c) ☐ Rule 1126(c)(4) ☐ Rule 1132(g) ☐ Rule 1171(c)(6)

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Marine Coating (Except for recreational equipment)	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1106 (01/13/95) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART II	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1106(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1106(c)(5) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Metal Coating	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1107 (01/06/06) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART EE ☐ 40 CFR60 SUBPART SS ☐ 40 CFR63 SUBPART NNNN ☐ 40 CFR63 SUBPART MMMM ☐ 40 CFR63 SUBPART RRRR	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1107(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1107(j) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Metal Containers, Closure, & Coil Coating Operations	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1125 (03/07/08) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART TT ☐ 40 CFR60 SUBPART WW ☐ 40 CFR63 SUBPART KKKK ☐ 40 CFR63 SUBPART SSSS	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1125(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1125(c)(6) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Motor Vehicle & Mobile Equipment Non-Assembly Line Coating Operation	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1132 (05/05/06) ☐ Rule 1151 (12/02/05) ☐ Rule 1171 (05/01/09)	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1132(f) ☐ Rule 1151(h) ☐ Rule 1171(e)	☐ Rule 109© ☐ Rule 1132(g) ☐ Rule 1151(f) ☐ Rule 1171(c)(6)

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Motor Vehicle Assembly Line	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1115 (05/12/95) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART MM ☐ 40 CFR63 SUBPART IIII	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1115(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1115(g) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Paper, Fabric, & Film Coating Operations	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1128 (03/08/96) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART VVV ☐ 40 CFR63 SUBPART OOOO	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1128(f) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1128(e) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Plastic, Rubber, & Glass	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1145 (12/04/09) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART TTT ☐ 40 CFR63 SUBPART NNNN ☐ 40 CFR63 SUBPART PPPP	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1145(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1145(d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Pleasure Craft	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1106.1 (02/12/99) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART II	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1106.1(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1106.1(d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Screen Printing	☐ Rule 109 (05/02/03) ☐ Rule 1130.1 (12/13/96) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART KK	☐ Rule 109(g) ☐ Rule 1130.1(g) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1130.1(c)(5) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☑ Coating Operation, Use Of Architectural Coating (Stationary Structures)	☑ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☑ Rule 1113 (07/13/07) ☐ Rule 1132 (05/05/06) ☑ Rule 1171 (05/01/09)	☑ Rule 109(g) ☐ Rule 481(d) ☑ Rule 1113(e) ☐ Rule 1132(f) ☑ Rule 1171(e)	☑ Rule 109(c) ☐ Rule 1132(g) ☑ Rule 1171(c)(6)
☐ Coating Operation, Wood Flat Stock	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1104 (08/13/99) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART II	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1104(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1104(d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Wood Products (Commercial Furniture, Cabinets, Shutters, Frames, Toys)	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1132 (05/05/06) ☐ Rule 1136 (06/14/96) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART JJ	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1132(f) ☐ Rule 1136(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1132(g) ☐ Rule 1136(d) & (g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coater	See Coating Operations		
☐ Columns	See Petroleum Refineries, Fugitive Emissions		
☐ Composting Operation	☐ Rule 1133 (01/10/03) ☐ Rule 1133.1 (01/10/03) ☐ Rule 1133.2 (01/10/03)	☐ Rule 1133.1(e) ☐ Rule 1133.2(g)	☐ Rule 1133.1(d) ☐ Rule 1133.2(h)
☐ Compressors	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		
☐ Concrete Batch Plants	See Nonmetallic Mineral Processing Plants		
☐ Consumer Product Manufacturing	See Manufacturing, Consumer Product		
☐ Cooling Tower, Hexavalent Chromium	☐ 40 CFR63 SUBPART Q	See Applicable Subpart	See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Copper Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Crude Oil Production	See Oil Well Operations		
☐ Crusher	See Nonmetallic Mineral Processing Plants		
☐ Dairy Farms and Related Operations	☐ Rule 1127 (08/06/04)	☐ Rule 1127(h)	☐ Rule 1127(g)
☐ Degreasers	☐ Rule 109 (05/02/03) ☐ Rule 1122 (05/01/09) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART T	☐ Rule 109(g) ☐ Rule 1122(h) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1122(i) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Dry Cleaning, Perchloroethlyene	☐ Rule 1421 (12/06/02)	☐ Rule 1421(e) & (i)	☐ Rule 1421(g) & (h)
☐ Dry Cleaning, Petroleum Solvent	☐ Rule 109 (05/02/03) ☐ Rule 1102 (11/17/00) ☐ 40 CFR60 SUBPART JJJ	☐ Rule 109(g) ☐ Rule 1102(g) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1102(f) See Applicable Subpart
☐ Dryers, Mineral Industries	☐ 40 CFR60 SUBPART UUU	See Applicable Subpart	See Applicable Subpart
☐ Ethylene Oxide Sterilizer	See Sterilizer, Ethylene Oxide		
☐ Flanges	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		
☐ Fluid Catalytic Cracking Unit	☐ Rule 218 (05/14/99) ☐ Rule 1105 (09/01/84) ☐ Rule 1105.1 (11/07/03)	☐ AQMD TM 100.1 ☐ Rule 1105(c)(1) ☐ Rule 1105.1(f)	☐ Rule 218(e) & (f) ☐ Rule 1105(c)(2) ☐ Rule 1105.1(e)
☐ Foundries, Iron and Steel	☐ 40 CFR63 SUBPART EEEEE	See Applicable Subpart	See Applicable Subpart
☐ Friction Materials Manufacturing	See Manufacturing, Friction Materials		
☐ Fugitive Emissions, Benzene	☐ Rule 1173 (12/06/02) ☐ 40 CFR61 SUBPART L ☐ 40 CFR61 SUBPART V ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART CC	☐ Rule 1173(j) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1173(i) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Fugitive Emissions, Chemical Plant	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR60 SUBPART VV	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Fugitive Emissions, Natural Gas Processing Plant	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR60 SUBPART KKK	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Fugitive Emissions, Oil & Gas Production Facility	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Fugitive Emissions, Pipeline Transfer Station	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Basic Oxygen Process	☐ 40 CFR60 SUBPART Na	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Electric Arc, For Steel Plants: Constructed After August 17, 1983	☐ 40 CFR60 SUBPART AAa	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Electric Arc, For Steel Plants: Constructed After Oct. 21, 1974, & On Or Before Aug. 17, 1983	☐ 40 CFR60 SUBPART AA	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Glass Melting	☐ Rule 1117 (01/06/84)	☐ Rule 1117(c), AQMD TM 7.1 or 100.1	
	☐ 40 CFR60 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Lead Melting, Automotive Batteries	☐ Rule 1101 (10/07/77)	☐ AQMD TM 6.1	
	☐ 40 CFR63 SUBPART X	See Applicable Subpart	See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Gasoline Transfer & Dispensing Operation	☐ Rule 461 (06/03/05)	☐ Rule 461(f)	☐ Rule 461(e)(6) & (e)(7)
☐ Glass Manufacturing	See Manufacturing, Glass		
☐ Grain Elevators	☐ 40 CFR60 SUBPART DD	See Applicable Subpart	See Applicable Subpart
☐ Halon-containing Equipment, Use for Technician Training, Testing, Maintenance, Service, Repair, or Disposal	☐ 40 CFR82 SUBPART H	See Applicable Subpart	See Applicable Subpart
☐ Hazardous Waste Combustors	☐ 40 CFR63 SUBPART EEE	See Applicable Subpart	See Applicable Subpart
☐ Heater, Asphalt Pavement	☐ Rule 1120 (08/04/78)	☐ AQMD Visible Emissions, AQMD TM 6.2	☐ Rule 1120(f)
☐ Heaters, Petroleum Refinery Process	☐ Rule 429 (12/21/90) ☐ Rule 431.1 (06/12/98) ☐ Rule 1146 (09/05/08) ☐ 40 CFR60 SUBPART J ☐ 40 CFR63 SUBPART DDDDD	N/A ☐ Rule 431.1(f) ☐ Rule 1146(d) See Applicable Subpart See Applicable Subpart	☐ Rule 429(d) ☐ Rule 431.1(d) & (e) ☐ Rule 1146(c)(6) & (c)(7) See Applicable Subpart See Applicable Subpart
☐ Heaters, Process	See Boilers		
☐ Incinerators	☐ 40 CFR60 SUBPART E ☐ 40 CFR60 SUBPART CCCC	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Inorganic Arsenic Emissions, Arsenic Trioxide & Metallic Arsenic Production Facilities	☐ 40 CFR61 SUBPART P	See Applicable Subpart	See Applicable Subpart
☑ Internal Combustion Engines, Reciprocating	☑ Rule 1110.2 (07/09/10) ☑ 40 CFR60 SUBPART IIII and JJJJ ☑ 40 CFR63 SUBPART ZZZZ	Rule 1110.2(g) See Applicable Subpart See Applicable Subpart	Rule 1110.2(f) See Applicable Subpart See Applicable Subpart
☐ Kiln, Cement Plant	☐ Rule 1112 (06/06/86) ☐ Rule 1112.1 (12/04/09) ☐ 40 CFR60 SUBPART F	N/A N/A See Applicable Subpart	N/A N/A See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Landfills	☐ Rule 1150 (10/15/82) ☐ Rule 1150.1 (03/17/00) ☐ 40 CFR60 SUBPART WWW ☐ 40 CFR63 SUBPART AAAA	☐ Rule 1150.1(j) See Applicable Subpart See Applicable Subpart	☐ Rule 1150.1(e) & (f) See Applicable Subpart See Applicable Subpart
☐ Lead Acid Battery Manufacturing Plants	See Manufacturing, Lead Acid Battery		
☐ Lead Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Manufacturing, Asphalt Processing & Asphalt Roofing	☐ Rule 470 (05/07/76) ☐ Rule 1108 (02/01/85) ☐ Rule 1108.1 (11/04/83) ☐ 40 CFR60 SUBPART UU ☐ 40 CFR63 SUBPART LLLLL	N/A ☐ Rule 1108(b) ☐ Rule 1108.1 (b) See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Brick & Structural Clay Products	☐ 40 CFR63 SUBPART JJJJJ	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Cement	☐ Rule 1156 (03/06/09)	☐ Rule 1156(g)	☐ Rule 1156(f)
☐ Manufacturing, Clay Ceramics	☐ 40 CFR63 SUBPART KKKKK	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Coatings & Ink (SIC Code 2851)	☐ Rule 1141.1 (11/17/00) ☐ 40 CFR63 SUBPART HHHHH	N/A See Applicable Subpart	☐ Rule 1141.1(c) See Applicable Subpart
☐ Manufacturing, Consumer Product	☐ Title 17 CCR 94500		
☐ Manufacturing, Food Product	☐ Rule 1131 (06/06/03)	☐ Rule 1131(e)	☐ Rule 1131(d)
☐ Manufacturing, Friction Materials	☐ 40 CFR63 SUBPART QQQQQ	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Glass	☐ Rule 1117 (01/06/84) ☐ 40 CFR60 SUBPART CC ☐ 40 CFR61 SUBPART N	☐ Rule 1117(c), AQMD TM 7.1 or 100.1 See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Hydrochloric Acid	☐ 40 CFR63 SUBPART NNNNN	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Lead-Acid Battery	☐ 40 CFR60 SUBPART KK	See Applicable Subpart	See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Manufacturing, Lime	☐ 40 CFR63 SUBPART AAAAA	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Magnetic Tape Industry	☐ 40 CFR60 SUBPART SSS ☐ 40 CFR63 SUBPART EE	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Miscellaneous Organic Chemical	☐ 40 CFR63 SUBPART FFFF	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Nitric Acid	☐ Rule 218 (05/14/99) ☐ Rule 1159 (12/06/85) ☐ 40 CFR60 SUBPART G	☐ AQMD TM 100.1 ☐ AQMD TM 7.1 or 100.1 See Applicable Subpart	☐ Rule 218(e) & (f) See Applicable Subpart
☐ Manufacturing, Plywood & Composite Wood Products	☐ Rule 1137 (02/01/02) ☐ 40 CFR63 SUBPART DDDD	N/A See Applicable Subpart	☐ Rule 1137(e) See Applicable Subpart
☐ Manufacturing, Polymer Industry	☐ 40 CFR60 SUBPART DDD ☐ 40 CFR63 SUBPART W ☐ 40 CFR63 SUBPART J	See Applicable Subpart See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Polymeric Cellular Foam	☐ Rule 1175 (09/07/07) ☐ 40 CFR63 SUBPART UUUU	☐ Rule 1175(f) See Applicable Subpart	☐ Rule 1175(e) See Applicable Subpart
☐ Manufacturing, Products Containing Halon Blends	☐ 40 CFR82 SUBPART H	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Products Containing Organic Solvents	☐ Rule 443.1 (12/05/86)	N/A	N/A
☐ Manufacturing, Products Containing Ozone Depleting Substances (ODS)	☐ 40 CFR82 SUBPART A ☐ 40 CFR82 SUBPART E	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Reinforced Plastic Composites	☐ 40 CFR63 SUBPART WWWW	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Refractory Products	☐ 40 CFR63 SUBPART SSSSS	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Resin	☐ Rule 1141 (11/17/00) ☐ 40 CFR63 SUBPART W	☐ Rule 1141(d) See Applicable Subpart	☐ Rule 1141(c) See Applicable Subpart
☐ Manufacturing, Rubber Tire	☐ 40 CFR63 SUBPART XXXX	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Semiconductors	☐ Rule 109 (05/02/03) ☐ Rule 1164 (01/13/95) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART BBBBB	☐ Rule 109(g) ☐ Rule 1164(e) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1164(c)(5) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Manufacturing, Solvent	☐ Rule 443 (05/07/76)	N/A	N/A

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Manufacturing, Sulfuric Acid	☐ Rule 469 (02/13/81) ☐ 40 CFR60 SUBPART H ☐ 40 CFR60 SUBPART Cd	☐ AQMD TM 6.1 or 6.2 See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Surfactant	☐ Rule 1141.2 (01/11/02)	☐ Rule 1141.2(e) ☐ AQMD TM 25.1	
☐ Manufacturing, Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes	☐ 40 CFR60 SUBPART III ☐ 40 CFR60 SUBPART NNN	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes	☐ 40 CFR60 SUBPART RRR	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Vinyl Chloride	☐ 40 CFR61 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Water Heaters	☐ Rule 1121 (09/03/04)	N/A	N/A
☐ Manufacturing, Wool Fiberglass Insulation	☐ 40 CFR60 SUBPART PPP	See Applicable Subpart	See Applicable Subpart
☐ Manure Processing Operations	☐ Rule 1127 (08/06/04)	☐ Rule 1127(h)	☐ Rule 1127(g)
☐ Marine Tank Vessel Operations	☐ Rule 1142 (07/19/91) ☐ Rule 1173 (02/06/09) ☐ 40 CFR63 SUBPART Y	☐ Rule 1142(e) ☐ Rule 1173(j) See Applicable Subpart	☐ Rule 1142(h) ☐ Rule 1173(i) See Applicable Subpart
☐ Mercury Emissions	☐ 40 CFR61 SUBPART E ☐ 40 CFR63 SUBPART IIII	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Motor Vehicle Air Conditioners with Ozone Depleting Substances (ODS): Repair, Service, Manufacturing, Maintenance, or Disposal	☐ 40 CFR82 SUBPART B ☐ 40 CFR82 SUBPART F	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Municipal Waste Combustors	☐ 40 CFR60 SUBPART Cb ☐ 40 CFR60 SUBPART Ea ☐ 40 CFR60 SUBPART Eb	See Applicable Subpart See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Negative Air Machines/HEPA, Asbestos	☐ 40 CFR61 SUBPART M	See Applicable Subpart	See Applicable Subpart
☐ Nickel Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Nonmetallic Mineral Processing Plants	☐ Rule 404 (02/07/86) ☐ Rule 405 (02/07/86) ☐ 40 CFR60 SUBPART OOO	☐ AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 5.1, 5.2, or 5.3 See Applicable Subpart	See Applicable Subpart
☐ Off-site Waste and Recovery Operation	☐ 40 CFR63 SUBPART DD	See Applicable Subpart	See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Oil and Gas Well Operation	☐ Rule 1148 (11/05/82) ☐ Rule 1148.1 (03/05/04)	☐ AQMD TM 25.1 ☐ Rule 1148.1 (g)	☐ Rule 1148.1 (f)
☐ Onshore Natural Gas Processing, SO2 Emissions	☐ 40 CFR60 SUBPART LLL	See Applicable Subpart	See Applicable Subpart
☐ Open Fires	☐ Rule 444 (11/07/08)		
☐ Open Storage, Petroleum Coke	☐ Rule 403 (06/03/05) ☐ Rule 403.1 (04/02/04) ☐ Rule 1158 (06/11/99)	☐ Rule 403(d)(4) ☐ Rule 1158(h)	☐ Rule 403(f) ☐ Rule 403.1(h) ☐ Rule 1158(j)
☐ Open Storage	☐ Rule 403 (06/03/05) ☐ Rule 403.1 (04/02/04)	☐ Rule 403(d)(4)	☐ Rule 403(f) ☐ Rule 403.1(h)
☐ Outer Continental Shelf Platform	☐ Rule 1183 (03/12/93) ☐ 40 CFR55	☐ 40 CFR55 See Applicable Subpart	☐ 40 CFR55 See Applicable Subpart
☐ Oven, Commercial Bakery	☐ Rule 1153 (01/13/95)	☐ Rule 1153(h)	☐ Rule 1153(g)
☐ Oven, Petroleum Coke	☐ Rule 477 (04/03/81) ☐ 40 CFR63 SUBPART L ☐ 40 CFR63 SUBPART CCCCC	☐ AQMD Visible Emissions, AQMD TM 5.1, 5.2, or 5.3 See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Ozone Depleting Substances (ODS) or Alternative ODS, Use	☐ 40 CFR82 Subpart G	See Applicable Subpart	See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Petroleum Refineries	☐ Rule 218 (05/14/99)	☐ AQMD TM 100.1	☐ Rule 218(e) & (f)
	☐ Rule 465 (08/13/99)		
	☐ Rule 468 (10/08/76)	☐ AQMD TM 6.1 or 6.2	
	☐ Rule 469 (02/13/81)	☐ AQMD TM 6.1 or 6.2	
	☐ Rule 1118 (11/04/05)	☐ Rule 1118(j)	☐ Rule 1118(f), (g), (h), & (i)
	☐ Rule 1123 (12/07/90)	N/A	☐ Rule 1123(c)
	☐ Rule 1189 (01/21/00)	☐ Rule 1189(f)	☐ Rule 1189(e)
	☐ 40 CFR60 SUBPART J	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART EEEE	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART GGGGG	See Applicable Subpart	See Applicable Subpart
	☐ Title 13 CCR 2250		
☐ Petroleum Refineries, Fugitive Emissions	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ 40 CFR60 SUBPART GGG	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Petroleum Refineries, Storage Tanks	☐ Rule 463 (05/06/05)	☐ Rule 463(g)	☐ Rule 463(e)(5)
	☐ Rule 1178 (04/07/06)	☐ Rule 1178(i)	☐ Rule 1178(f) & (h)
	☐ 40 CFR60 SUBPART K	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART Ka	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART Kb	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART EEEE	See Applicable Subpart	See Applicable Subpart
☐ Petroleum Refineries, Wastewater Systems	☐ Rule 1176 (09/13/96)	☐ Rule 1176(h)	☐ Rule 1176(f) & (g)
	☐ Rule 464 (12/07/90)	N/A	
	☐ 40 CFR60 SUBPART QQQ	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Pharmaceuticals & Cosmetics Manufacturing	☐ Rule 1103 (03/12/99)	☐ Rule 1103(f)	☐ Rule 1103(e)
	☐ 40 CFR63 SUBPART GGG	See Applicable Subpart	See Applicable Subpart
☐ Polyester Resin Operation	☐ Rule 109 (05/02/03)	☐ Rule 109(g)	☐ Rule 109(c)
	☐ Rule 1162 (07/08/05)	☐ Rule 1162(f)	☐ Rule 1162(e)
	☐ Rule 1171 (05/01/09)	☐ Rule 1171(e)	☐ Rule 1171(c)(6)
☐ Primary Magnesium Refining	☐ 40 CFR63 SUBPART TTTTT	See Applicable Subpart	See Applicable Subpart
☐ Printing Press	See Coating Operations		
☐ Publicly Owned Treatment Works Operations	☐ Rule 1179 (03/06/92)	☐ Rule 1179(e)	☐ Rule 1179(c) & (d)
	☐ 40 CFR60 SUBPART O	See Applicable Subpart	See Applicable Subpart
☐ Pumps	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Recycling & Recovery Equipment for Ozone Depleting Substances (ODS),	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Refrigerant Reclaimers for Ozone Depleting Substances (ODS)	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Rendering Plant	☐ Rule 472 (05/07/76)	N/A	☐ Rule 472(b)
☐ Rock Crushing	See Nonmetallic Mineral Processing Plants		
☐ Secondary Aluminum Production	☐ 40 CFR63 SUBPART LL	See Applicable Subpart	See Applicable Subpart
☐ Semiconductor Manufacturing	See Manufacturing, Semiconductors		
☐ Sewage Treatment Plants	See Publicly Owned Treatment Works Operation		
☐ Site Remediation	☐ 40 CFR63 SUBPART GGGGG	See Applicable Subpart	See Applicable Subpart
☐ Smelting, Primary Copper	☐ 40 CFR63 SUBPART QQQ	See Applicable Subpart	See Applicable Subpart
☐ Smelting, Secondary Lead	☐ 40 CFR60 SUBPART L ☐ 40 CFR63 SUBPART X	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Soil Decontamination / Excavation	☐ Rule 1166 (05/11/01) ☐ 40 CFR63 SUBPART GGGGG	☐ Rule 1166(e) See Applicable Subpart	☐ Rule 1166(c)(1)(C) See Applicable Subpart
☐ Spray Booth	See Coating Operations		
☐ Sterilizer, Ethylene Oxide	☐ 40 CFR63 SUBPART O	See Applicable Subpart	See Applicable Subpart
☐ Storage Tank, Degassing Operation	☐ Rule 1149 (07/14/95) ☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Storage Tank, Greater Than 19,815 Gallon Capacity	☐ Rule 463 (05/06/05) ☐ Rule 1178 (04/07/06) ☐ 40 CFR63 SUBPART F ☐ 40 CFR63 SUBPART G ☐ 40 CFR63 SUBPART H ☐ 40 CFR63 SUBPART I ☐ 40 CFR60 SUBPART K ☐ 40 CFR60 SUBPART Ka ☐ 40 CFR60 SUBPART Kb ☐ 40 CFR63 SUBPART R ☐ 40CFR63 SUBPART BBBBBB ☐ 40 CFR63 SUBPART CC	☐ Rule 463(g) ☐ Rule 1178(i) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 463(e)(5) ☐ Rule 1178(h) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Synthetic Fiber Production Facilities	☐ 40 CFR60 SUBPART HHH	See Applicable Subpart	See Applicable Subpart
☐ Taconite Iron Ore Processing Facilities	☐ 40 CFR63 SUBPART RRRRR	See Applicable Subpart	See Applicable Subpart
☑ Turbine, Stationary Gas-Fired	☐ Rule 1134 (08/08/97) ☑ Rule 475 (08/07/78) ☐ 40 CFR60 SUBPART GG ☑ 40 CFR60 SUBPART KKKK ☐ 40 CFR63 SUBPART YYYY	☐ Rule 1134(e) & (g) ☑ AQMD TM 5.1, 5.2, or 5.3 See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1134(d) & (f) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Turbine, Stationary Oil-Fired	☐ 40 CFR63 SUBPART YYYY	See Applicable Subpart	See Applicable Subpart
☐ Valves	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		
☐ Vessel, Refinery Process	☐ Rule 1123 (12/07/90)	N/A	☐ Rule 1123(c)
☐ Vessels	See Petroleum Refineries, Fugitive Emissions		

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Wastewater, Chemical Plant	☐ Rule 464 (12/07/90) ☐ Rule 1176 (09/13/96) ☐ 40 CFR63 SUBPART F ☐ 40 CFR63 SUBPART G ☐ 40 CFR63 SUBPART H ☐ 40 CFR63 SUBPART I ☐ 40 CFR63 SUBPART CC	N/A ☐ Rule 1176(h) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Wastewater Treatment, Other	☐ Rule 464 (12/07/90) ☐ Rule 1176 (09/13/96)	N/A ☐ Rule 1176(h)	☐ Rule 1176(f) & (g)
☐ Woodworking Operations	☐ Rule 1137 (02/01/02)	N/A	☐ Rule 1137(e)

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section III - Supplemental Identification of Specific Requirements

Complete this section only if there is a specific requirement (i.e., rule reference, test method, or MRR requirement) that is:

1. Listed for a specific type of equipment or process in Section II of this form & **DOES NOT** pertain to a specific device at your facility*; OR,
2. Is **NOT** Listed for a specific type of equipment or process in Section II of this form but it **IS** applicable to a specific device at your facility.

NOTES:

1. For any specific requirement, test method, or MRR requirement that is identified as "Remove," attach additional sheets to explain the reasons why the specific requirement does not pertain to the device listed.
2. All boxes that are checked in Section II and any additional requirements identified in this section as "Add" will be used to determine the facility's compliance status. This information will be used to verify the certification statements made on Form 500-A2.
3. Do not use this section to identify equipment that is exempt from specific rule requirements. Your equipment is automatically considered to be in compliance with the rule that specifically exempts the equipment from those requirements.
4. Listing any requirement that does not apply to a specific piece of equipment in this section will not provide the facility with a permit shield unless one is specifically requested by completing Form 500-D and approved by the AQMD.

* If this section is completed as part of the initial Title V application & there is no device number assigned, refer to the existing permit or application number in this column.

Device No.*	Specific Requirement (Rule Number & Date)	Add (A) or Remove (R) (Check one)	Test Method	Add (A) or Remove (R) (Check one)	MRR Requirement	Add (A) or Remove (R) (Check one)
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R

Section IV - SIP-Approved Rules That Are Not The Most Current AQMD Rules					
Check off each SIP-Approved Rule as it applies to the facility. Use the blanks at the end of this form to fill-in new items.					
SIP - Approved Rule	**Adoption/ Amendment Date**	**Check (✓) If Applies**	**SIP - Approved Rule**	**Adoption/ Amendment Date**	**Check (✓) If Applies**
401	03/02/84	☑			☐
431.2	05/04/90	☑			☐
461	6/3/05	☐			☐
466.1	05/02/80	☐			☐
469	04/07/76	☐			☐
475	10/08/76	☑			☐
1112	01/06/84	☐			☐
1112.1	2/7/86	☐			☐
1113	11/08/96	☑			☐
1117	1/6/83	☐			☐
1122	07/11/97	☐			☐
1132	03/05/04	☐			☐
1140	02/01/80	☐			☐
1146	11/17/00	☐			☐
1146.1	5/13/94	☐			☐
1151	12/11/98	☐			☐
1158	6/11/99	☐			☐
1162	11/17/00	☐			☐
1166	07/14/95	☐			☐
1171	11/07/03	☑			☐
1175	05/13/94	☐			☐
1186	09/10/99	☐			☐

Section V - AQMD Rules That Are Not SIP-Approved (Continued on Following Page)					
Check off each AQMD Rule as it applies to the facility. Use the blanks at the end of this form to fill-in new items.					
Non SIP - Approved Rule	**Adoption/ Amendment Date**	**Check (✓) If Applies**	**Non SIP - Approved Rule**	**Adoption/ Amendment Date**	**Check (✓) If Applies**
53 Los Angeles Co.	N/A	☐	1192	06/16/00	☐
53 Orange Co.	N/A	☐	1193	07/09/10	☐
53 Riverside Co.	N/A	☐	1194	10/20/00	☐
53 San Bernardino Co.	N/A	☐	1195	05/05/06	☐
53A San Bernardino Co.	N/A	☐	1196	06/06/08	☐
402	05/07/76	☐	1401	09/10/10	☑
429	12/21/90	☐	1401.1	11/04/05	☐
430	07/12/96	☑	1402	03/04/05	☐
441	05/07/76	☐	1403	10/05/07	☐
473	05/07/76	☐	1404	04/06/90	☐
477	04/03/81	☐	1405	01/04/91	☐
480	10/07/77	☐	1406	07/08/94	☐
1109	08/05/88	☐	1407	07/08/94	☐
1110.2	07/09/10	☑	1411	03/01/91	☐
1116.1	10/20/78	☐	1414	05/03/91	☐
1127	08/06/04	☐	1415	10/14/94	☐
1143	07/09/10	☐	1418	09/10/99	☐
1147	12/05/08	☐	1420	09/11/92	☐
1148.1	03/05/04	☐	1420.1	11/05/10	☐
1150	10/15/82	☐	1421	12/06/02	☐
1155	12/04/09	☐	1425	03/16/01	☐
1156	03/06/09	☐	1426	05/02/03	☐
1157	09/08/06	☐			☐
1163	06/07/85	☐			☐
1170	05/06/88	☐			☐
1183	03/12/93	☐			☐
1186.1	01/09/09	☐			☐
1191	06/16/00	☐			☐

Section V - AQMD Rules That Are Not SIP-Approved (Continued on Following Page)					
Check off each AQMD Rule as it applies to the facility. Use the blanks at the end of this form to fill-in new items.					
Non SIP - Approved Rule	**Adoption/ Amendment Date**	**Check (✓) If Applies**	**Non SIP - Approved Rule**	**Adoption/ Amendment Date**	**Check (✓) If Applies**
1469	12/05/08	☐	2009.1	05/11/01	☐
1469.1	03/04/05	☐	2501	05/09/97	☐
1470	06/01/07	☑	2506	12/10/99	☐
1472	03/07/08	☐			☐
2009	01/07/05	☐			☐
		☐			☐
		☐			☐
		☐			☐
		☐			☐
		☐			☐

South Coast Air Quality Management District

Form 500-F1 (Title V)

Title IV - Acid Rain Phase II Facility Information Summary

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

This form shall be completed by Acid Rain facilities ONLY and shall accompany all requests for Phase II permit actions unique to Acid Rain facilities. Also attach a completed Form 500-A2. In addition, if an initial Title V permit, permit renewal, or permit revision is requested, attach Form 500-A1 and any supplemental Acid Rain forms (Forms 500-F2, 500-F3, and 500-F4), as appropriate.

Section I - General Information

1. Facility Name (Business Name of Operator That Appears On Permit): Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 152707

3. ORIS Code (5-Digit): 57482

4. This is an application for a (Check all that apply to the facility):

- **a.** ☑ Phase II Acid Rain Permit or Revision (Complete Section II of this form)
- **b.** ☐ Repowering Extension Plan or Revision (Complete Form 500-F2)
- **c.** ☐ New Unit Exemption or Revision (Complete Form 500-F3)
- **d.** ☐ Retired Unit Exemption or Revision (Complete Form 500-F4)

5. The requested permit action involves a(n) (Check one):

- **a.** ○ Administrative Permit Revision
- **b.** ○ Significant Permit Revision
- **c.** ○ Fast Track Permit Revision
- **d.** ○ Automatic Permit Revision
- **e.** ◉ Other (specify): Increase Annual Start-ups and Add Blackstart (All Eight Units)

6. For all applications requesting a permit revision, provide a general description of the proposed changes (Attach additional sheets as necessary):

Sentinel is proposing to increase annual start-ups and add blackstart or all eight units.

Section II - Phase II Acid Rain Device Summary

1. The following information is (Check one): **a.** ○ New **b.** ○ Revised

AQMD Device #	EPA Unit #	Will device need a Repowering Extension Plan?	Has device started operations on or after 11/15/90?	Device Operations Start Date (mo/day/yr)	For devices starting-up after 11/15/90, provide date when Monitoring Certification will begin (mo/day/yr)
		○ Yes ○ No	○ Yes ○ No		
		○ Yes ○ No	○ Yes ○ No		
		○ Yes ○ No	○ Yes ○ No		
		○ Yes ○ No	○ Yes ○ No		
		○ Yes ○ No	○ Yes ○ No		

To complete this application, type or print the information in the appropriate blanks.

Section I - General Information

1. **Facility Name:** Provide the name of the legal entity that operates the facility.

   AQMD Facility ID: Complete only if the facility has been issued a 6-digit identification or ID number by AQMD. If not, leave these boxes blank. An ID number will be assigned when the application is submitted.

   ORIS Code: Provide the 5-digit code that has been assigned to facility by Department of Energy.

2. Check all applicable boxes to indicate the type of Acid Rain application filed. If box 1a. is checked, complete Section II of this form. If box 1b. is checked, complete and attach Form 500-F2 - Title IV Phase II Acid Rain Repowering Extension Plan. If box 1c. is checked, complete and attach Form 500-F3 - Title IV Phase II Acid Rain New Unit Exemption Request. If box 1d. is checked, complete and attach Form 500-F4 - Title IV Phase II Acid Rain Retired Unit Exemption Request.

3. Check one box that best represents the type of permit action requested. If box 1e. is checked, in the space provided identify any additional elements regarding the application or the facility that need to be considered during the processing of this application (i.e., Initial Title V Permit Application).

4. If the application is a revision request, describe in general terms the changes that are proposed in the application revision request. Attach additional sheets as necessary.

Section II - Phase II Acid Rain Device Summary

1. Before completing this section, check one box to indicate whether this is a new application or a revision.

AQMD Device #:	Provide the identification number for each AQMD-assigned device subject to Phase II requirements.
EPA Unit #:	Provide the identification number for each EPA-assigned device subject to Phase II requirements.
Will device need a Repowering Extension Plan?:	Indicate with a "yes" or "no" if the device is or will be participating under a Repowering Extension Plan.
Has device started operations on or after 11/15/90?:	Indicate with a "yes" or "no" if the device was source tested or started operating on or after November 15, 1990.
Device Operations Start Date:	Complete this column only if the device was source tested or started operating on or after November 15, 1990. Provide the date (mo/day/yr) when the device started or will start operating. Note: If the date of beginning operations changes, an administrative permit revision application will be required.
For Devices starting-up after 11/15/90, provide date when Monitoring Certification will begin:	Complete this column only if the device was source tested or started operating on or after November 15, 1990. Provide the date (mo/day/yr) when compliance with the monitoring procedures for the device will begin. Refer to 40 CFR Part 75.4 to determine this date. Note: If the monitoring certification date changes, an administrative permit revision application will be required.

South Coast Air Quality Management District

Form 500-A2
Title V Application Certification

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): Sentinel Energy Center, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 152707

3. This Certification is submitted with a (Check one):

- **a.** (●) Title V Application (Initial, Revision or Renewal)
- **b.** ( ) Supplement/Correction to a Title V Application
- **c.** ( ) MACT Part 1

4. Is Form 500-C2 included with this Certification? ( ) Yes (●) No

Section II - Responsible Official Certification Statement

Read each statement carefully and check each that applies – ***You must check 3a or 3b.***

1. For Initial, Permit Renewal, and Administrative Application Certifications:

- **a.** ( ) The facility, including equipment that are exempt from written permit per Rule 219, is currently operating and will continue to operate in compliance with all applicable requirement(s) identified in Section II and Section III of Form 500-C1,
  - i. [ ] except for those requirements that do not specifically pertain to such devices or equipment and that have been identified as "Remove" on Section III of Form 500-C1.
  - ii. [ ] except for those devices or equipment that have been identified on the completed and attached Form 500-C2 that will not be operating in compliance with the specified applicable requirement(s).
- **b.** ( ) The facility, including equipment that are exempt from written permit per Rule 219, will meet in a timely manner, all applicable requirements with future effective dates.

2. For Permit Revision Application Certifications:

- **a.** [✓] The equipment or devices to which this permit revision applies, will in a timely manner comply with all applicable requirements identified in Section II and Section III of Form 500-C1.

3. For MACT Hammer Certifications:

- **a.** ( ) The facility is subject to Section 112(j) of the Clean Air Act (Subpart B of 40 CFR part 63), also known as the MACT "hammer." The following information is submitted with a Title V application to comply with the Part 1 requirements of Section 112(j).
- **b.** (●) The facility is not subject to Section 112(j) of the Clean Air Act (Subpart B of 40 CFR part 63).

Section III - Authorization/Signature

I certify under penalty of law that I am the responsible official for this facility as defined in AQMD Regulation XXX and that based on information and belief formed after reasonable inquiry, the statement and information in this document and in all attached application forms and other materials are true, accurate, and complete.

1. Signature of Responsible Official:	2. Title of Responsible Official: Plant Manager
3. Print Name: Dennis Johnson	4. Date:
5. Phone #: (760) 288-7901	6. Fax #:

7. Address of Responsible Official:

Street #	City	State	Zip
15775 Melissa Lane Rd.	North Palm Springs	CA	92258

Acid Rain Facilities Only: Please Complete Section IV

Acid Rain facilities must certify their compliance status of the devices subject to applicable requirements under Title IV by an individual who meets the definition of Designated (or Alternate) Representative in 40 CFR Part 72.

Section IV - Designated Representative Certification Statement	
***For Acid Rain Facilities Only*: I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.**	
1. Signature of Designated Representative or Alternate:	**2. Title of Designated Representative or Alternate:** Plant Manager
3. Print Name of Designated Representative or Alternate: Dennis Johnson	**4. Date:**
5. Phone #: (760) 288-7901	**6. Fax #:**

7. Address of Designated Representative or Alternate:

15775 Melissa Lane	North Palm Springs	CA	92258
Street #	City	State	Zip

APPENDIX B – MANUFACTURER SPECIFICATIONS

Sentinel Black Start Project

Design Overview

Item	Description
Megapack Island	Consists of 12 Tesla Megapacks, each 2 MW/4MWh. Megapacks selected because of ability to "stand" alone without additional maintenance and upkeep. Includes civil, electrical and control systems.
Megapack Connection	Scope needed to connect Megapacks to 5 kV bus along with modifications to 5 kV bus. Due to Sentinel's advanced design, much of the work on Sentinel's existing distribution system is software and programming logic related related.
Other Facilities Improvements	Fencing and any other physical site improvements not included in other categories.
Security & Compliance	Entry, badging, perimeter alarms, security cameras, IT Audit/Complance costs, modifications to perimeter of control room.
Permitting & Approvals	• CEC AFC Amendment Process • MMA for existing interconnection since new source of generation on site, even though it's non-exporting • FERC • SCAQMD • Local to the extent not already included in contractor scope
Soft Costs	Bid Preparation, Engineering & Design (Sentinel), Legal support, Commercial Management, Construction insurance
Financing Costs	Interest during construction, assumed loan origination fees, debt service reserve funding.

Sentinel Black Start Project

Big Picture

To 5 kV system

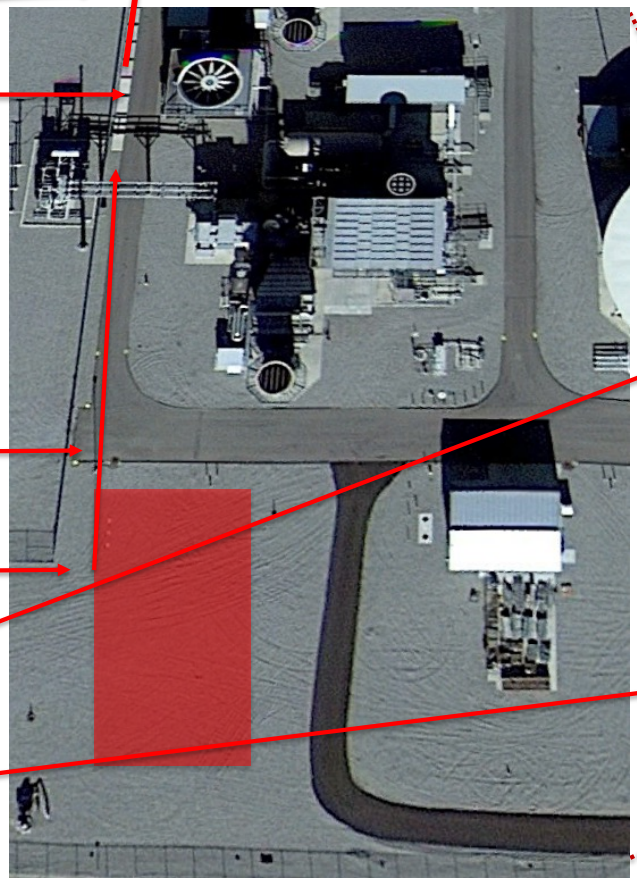
Existing 5kV Trenwa

Connection to
5 kV system

Megapacks

Control Room Mods

Entry System



Tesla Megapack

Product Information

Model	2 XL
Capacity (MW)	1.946
Energy (MWh)	3.893
Size	W x D x H 30' x 5.4' x 8.3'
Weight	84,000 lbs
RTE	90%
HVAC/Fire	Internal environmental and fire control
Megapacks at Site	12 23.35 MW 46.70 MWh

APPENDIX C – NO_X, CO, AND VOC EMISSION CALCULATIONS

Yorke ENGINEERING, LLC
www.YorkeEngr.com

Facility: Sentinel Energy Center, LLC
Facility ID: 152707

Sentinel Energy Center, LLC
Application to Increase Turbine Annual Startups and Add Black Start Capability

Appendix C Annual NOx Emission Calculations

NO = Normal Operations ; SU = Start-up ; SD = Shutdown

Table C.1 - Start-up Emissions (per Turbine)

Pre-/Post-	Count [A]	Minutes per SU[1] (min) [B]	Total Hours in SU[2] (hr/yr) [C]	NOx Emissions[3] (lb/hr) [D]	NOx Emissions[4] (lb/yr) [E]
Pre-	300	25	125.00	59.76	7,470.00
Post-	410	25	170.83	59.76	10,209.00

[1] Duration from A/N 472140
[2] [C] = [A] x [B] / 60
[3] Emissions from A/N 472140
[4] [E] = [C] x [D]

Table C.2 - Shutdown Emissions (per Turbine)

Pre-/Post-	Count [F]	Minutes per SD[1] (min) [G]	Total Hours in SD[2] (hr/yr) [H]	NOx Emissions[3] (lb/hr) [I]	NOx Emissions[4] (lb/yr) [J]
Pre-	300	10	50.00	34.95	1,747.50
Post-	410	10	68.33	34.95	2,388.25

[1] Duration from A/N 472140
[2] [H] = [F] x [G] / 60
[3] Emissions from A/N 472140
[4] [J] = [H] x [I]

Table C.3 - Normal Operations Emissions (per Turbine)

Pre-/Post-	Total Hours of Operation[1] (hr/yr) [K]	Total Hours in NO[2] (hr/yr) [L]	NOx Emissions[3] (lb/hr) [M]	NOx Emissions[4] (lb/yr) [N]
Pre-	2,803	2,628.00	7.92	20,813.76
Post-	2,440	2,201.18	7.92	17,433.32

[1] Total hours of operation from A/N 472140
[2] [L] = [K] - [C] - [H]
[3] Emissions from A/N 472140
[4] [N] = [L] x [M]

Table C.4 - Total Emissions (per Turbine)

Pre-/Post-	SU (lb/yr) [E]	SD (lb/yr) [J]	NO (lb/yr) [N]	Total[1] (lb/yr) [O]
Pre-	7,470.00	1,747.50	20,813.76	30,031
Post-	10,209.00	2,388.25	17,433.32	30,031
				↓↓↓
			Change (lb/yr)	0

[1] [O] = [E] + [J] + [N]

Table C.5 - Total SU Emiss (lb/1-hr event); Condition A433.1

Minutes in SU[1] (min) [B]	SU Emissions (lb/hr) [D]	Minutes in NO[2] (min) [P]	NO Emissions (lb/hr) [M]	A433.1[3] (lb/hr) [Q]
25	59.76	35	7.92	29.52

[1] From Table C.1
[2] [P] = 60 - [B]
[3] [Q] = [B] / 60 x [D] + [P] / 60 x [M]

Date Printed: 1/28/2022

Facility: Sentinel Energy Center, LLC
Facility ID: 152707

Sentinel Energy Center, LLC
Application to Increase Turbine Annual Startups and Add Black Start Capability

Appendix C Annual CO Emission Calculations

NO = Normal Operations ; SU = Start-up ; SD = Shutdown

Table C.6 - Start-up Emissions (per Turbine)

Pre-/Post-	Count [A]	Minutes per SU[1] (min) [B]	Total Hours in SU[2] (hr/yr) [C]	CO Emissions[3] (lb/hr) [D]	CO Emissions[4] (lb/yr) [E]
Pre-	300	25	125.00	38.15	4,768.75
Post-	410	25	170.83	38.15	6,517.29

[1] Duration from A/N 472140
[2] [C] = [A] x [B] / 60
[3] Emissions from A/N 472140
[4] [E] = [C] x [D]

Table C.7 - Shutdown Emissions (per Turbine)

Pre-/Post-	Count [F]	Minutes per SD[1] (min) [G]	Total Hours in SD[2] (hr/yr) [H]	CO Emissions[3] (lb/hr) [I]	CO Emissions[4] (lb/yr) [J]
Pre-	300	10	50.00	203.88	10,194.00
Post-	410	10	68.33	171.82	11,740.75

[1] Duration from A/N 472140
[2] [H] = [F] x [G] / 60
[3] Emissions from A/N 472140
[4] [J] = [H] x [I]

Table C.8 - Normal Operations Emissions (per Turbine)

Pre-/Post-	Total Hours of Operation[1] (hr/yr) [K]	Total Hours in NO[2] (hr/yr) [L]	CO Emissions[3] (lb/hr) [M]	CO Emissions[4] (lb/yr) [N]
Pre-	2,803	2,628.00	7.72	20,288.16
Post-	2,440	2,201.18	7.72	16,993.09

[1] Total hours of operation from A/N 472140
[2] [L] = [K] - [C] - [H]
[3] Emissions from A/N 472140
[4] [N] = [L] x [M]

Table C.9 - Total Emissions (per Turbine)

Pre-/Post-	SU (lb/yr) [E]	SD (lb/yr) [J]	NO (lb/yr) [N]	Total[1] (lb/yr) [O]
Pre-	4,768.75	10,194.00	20,288.16	35,251
Post-	6,517.29	11,740.75	16,993.09	35,251
				↓↓↓
			Change (lb/yr)	0

[1] [O] = [E] + [J] + [N]

Facility: Sentinel Energy Center, LLC
Facility ID: 152707

Sentinel Energy Center, LLC
Application to Increase Turbine Annual Startups and Add Black Start Capability

Appendix C Annual VOC Emission Calculations

NO = Normal Operations ; SU = Start-up ; SD = Shutdown

Table C.10 - Start-up Emissions (per Turbine)

Pre-/Post-	Count [A]	Minutes per SU[1] (min) [B]	Total Hours in SU[2] (hr/yr) [C]	VOC Emissions[3] (lb/hr) [D]	VOC Emissions[4] (lb/yr) [E]
Pre-	300	25	125.00	10.32	1,290.00
Post-	410	25	170.83	10.32	1,763.00

[1] Duration from A/N 472140
[2] [C] = [A] x [B] / 60
[3] Emissions from A/N 472140
[4] [E] = [C] x [D]

Table C.11 - Shutdown Emissions (per Turbine)

Pre-/Post-	Count [F]	Minutes per SD[1] (min) [G]	Total Hours in SD[2] (hr/yr) [H]	VOC Emissions[3] (lb/hr) [I]	VOC Emissions[4] (lb/yr) [J]
Pre-	300	10	50.00	17.48	874.00
Post-	410	10	68.33	17.48	1,194.47

[1] Duration from A/N 472140
[2] [H] = [F] x [G] / 60
[3] Emissions from A/N 472140
[4] [J] = [H] x [I]

Table C.12 - Normal Operations Emissions (per Turbine)

Pre-/Post-	Total Hours of Operation[1] (hr/yr) [K]	Total Hours in NO[2] (hr/yr) [L]	VOC Emissions[3] (lb/hr) [M]	VOC Emissions[4] (lb/yr) [N]
Pre-	2,803	2,628.00	2.21	5,807.88
Post-	2,440	2,201.18	2.21	4,864.60

[1] Total hours of operation from A/N 472140
[2] [L] = [K] - [C] - [H]
[3] Emissions from A/N 472140
[4] [N] = [L] x [M]

Table C.13 - Total Emissions (per Turbine)

Pre-/Post-	SU (lb/yr) [E]	SD (lb/yr) [J]	NO (lb/yr) [N]	Total[1] (lb/yr) [O]
Pre-	1,290.00	874.00	5,807.88	7,972
Post-	1,763.00	1,194.47	4,864.60	7,822
				↓↓↓
			Change (lb/yr)	-150

[1] [O] = [E] + [J] + [N]

Attachment 9.3

"Victorian Big Battery Fire: July 30, 2021" Fisher Engineering and Energy Safety Response Group, January 25, 2022

January 25, 2022

Victorian Big Battery Fire: July 30, 2021

REPORT OF TECHNICAL FINDINGS

ANDY BLUM, PE, CFEI
SENIOR FIRE PROTECTION ENGINEER

TOM BENSEN, PRINCIPAL FOUNDER
PAUL ROGERS, PRINCIPAL FOUNDER
CASEY GRANT, PE, SENIOR CONSULTANT
GEORGE HOUGH, SENIOR CONSULTANT

Fisher Engineering, Inc.
10475 MEDLOCK BRIDGE ROAD
SUITE 520
JOHNS CREEK GA 30097

Energy Safety Response Group
8350 US HIGHWAY N 23
DELAWARE OHIO 43015

Background

The Victorian Big Battery (VBB) is a 300-Megawatt (MW)/450-Megawatt hour (MWh) grid-scale battery storage project in Geelong, Australia. VBB is one of the largest battery installations in the world and can power over one million Victorian homes for 30 minutes during critical peak load situations.[1] It is designed to support the renewable energy industry by charging during times of excess renewable generation. The VBB is fitted with 212 Tesla Megapacks to provide the 300-MW/450-MWh of energy storage. The Megapack is a lithium-ion battery energy storage system (BESS) consisting of battery modules, power electronics, a thermal management system, and control systems all pre-manufactured within a single cabinet that is approximately 7.2 meters (m) in length, 1.6 m deep and 2.5 m in height (23.5 feet [ft] x 5.4 ft x 8.3 ft).

On Friday, July 30th, 2021, a single Megapack at VBB caught fire and spread to a neighboring Megapack during the initial installation and commissioning of the Megapacks. The fire did not spread beyond these two Megapacks and they burned themselves out over the course of approximately six hours. There were no injuries to the general public, to site personnel or to emergency first responders as the Megapacks failed safely (i.e., slowly burned themselves out with no explosions or deflagrations), as they are designed to do in the event of a fire. Per the guidance in Tesla's Lithium-Ion Battery Emergency Response Guide[2] (ERG), emergency responders permitted the Megapack to burn and consume itself while nearby exposures were being monitored at a safe distance. The total impact to the site was two out of the 212 Megapacks were fire damaged, or less than 1% of the BESS.

Following the emergency response, a detailed, multi-entity fire investigation commenced on August 3, 2021. The investigation process included local regulatory entities, Tesla, outside third-party engineers and subject matter experts. The investigation process involved analyzing both the fire origin and cause as well as the root cause of the fire propagation to the neighbor Megapack. In addition, given this is the first fire event in a Megapack installation to date, a review of the emergency response has been performed to identify any lessons learned from this fire event.

This report summarizes those investigations and analyses and has been prepared by Fisher Engineering, Inc. (FEI) and Energy Safety Response Group (ESRG), two independent engineering and energy storage fire safety consulting firms. In addition, this report provides a list of lessons learned from the fire and also highlights the procedural, software and hardware changes that have been implemented based on those lessons learned.

Incident Timeline

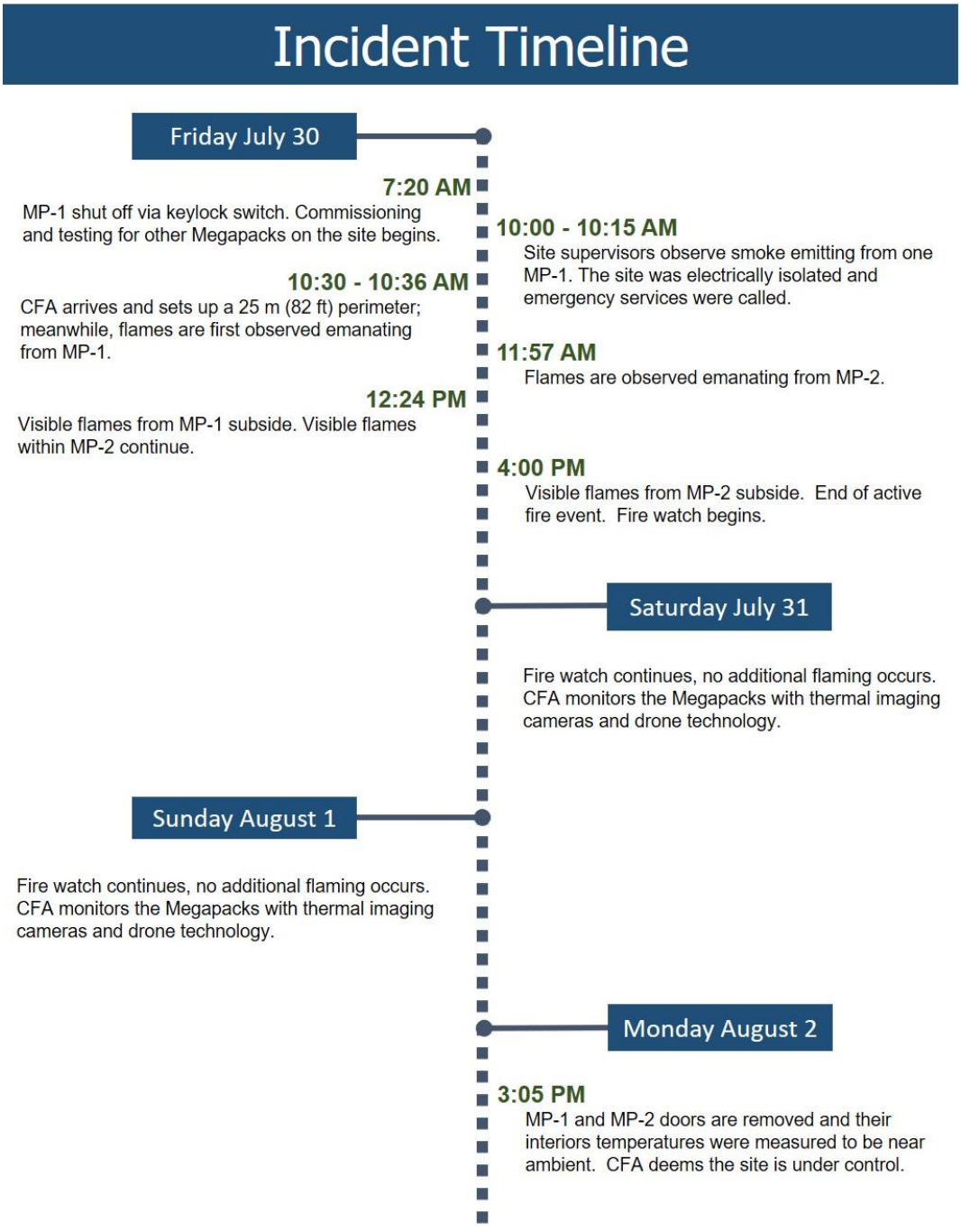
At the time of the fire, the VBB was fitted with approximately one-half of the 212 total Megapacks intended for the site. The Megapacks that were installed at VBB were undergoing routine testing and commissioning on the day of the fire. At 7:20 AM Australian Eastern Standard Time (AEST) on the morning of July 30, 2021, commissioning and testing of a number of Megapacks commenced. One such Megapack (denoted herein as MP-1), was not going to be tested that day and was therefore shut off manually by means of the keylock switch.[3] At the time MP-1 was shut down via the keylock switch, the unit displayed no abnormal conditions to site personnel. Around 10:00 AM, smoke was observed emitting from MP-1 by site personnel. Site personnel

[1] https://victorianbigbattery.com.au/

[2] https://www.tesla.com/sites/default/files/downloads/Lithium-Ion_Battery_Emergency_Response_Guide_en.pdf

[3] The keylock switch is a type of "lock out tag out" switch on the front of the Megapack that safely powers down the unit for servicing.

electrically isolated all the Megapacks on-site and called emergency services: Country Fire Authority (CFA). The CFA arrived shortly thereafter and set up a 25 m (82 ft) perimeter around MP-1. They also began applying cooling water to nearby exposures as recommended in Tesla's ERG. The fire eventually spread into a neighbor Megapack (MP-2) installed 15 centimeters (cm), or 6 inches (in), behind MP-1. The CFA permitted MP-1 and MP-2 to burn themselves out and did not directly apply water into or onto either Megapack, as recommended in Tesla's ERG. By 4:00 PM (approximately six hours after the start of the event), visible fire had subdued and a fire watch was instituted. The CFA monitored the site for the next three days before deeming it under control on August 2, 2021, at which time, the CFA handed the site over for the fire investigation to begin.



Investigation

A multi-entity fire investigation commenced on August 3, 2021. The VBB fire investigation process involved analyzing both the root cause of the initial fire in MP-1 as well as the root cause of the fire propagation into MP-2. The investigations included on-site inspections of MP-1 and MP-2 by the CFA, Energy Safe Victoria[4] (ESV), Work Safety Victoria[5] (WSV), local Tesla engineering/service teams and a local third-party independent engineering firm. In addition to the on-site work immediately after the incident, the root cause investigations also included data analysis, thermal modeling and physical testing (electrical and fire) performed by Tesla at their headquarters in California, USA and their fire test facility in Nevada, USA.

Fire Cause Investigation

On-site inspections commenced on August 3, 2021 and concluded on August 12, 2021. MP-1 and MP-2 were documented, inspected and preserved for future examinations, if necessary. Concurrently, all available telemetry data (such as internal temperatures and fault alarms) from MP-1 and MP-2 were analyzed and a series of electrical fault and fire tests were performed. The on-site investigation findings, the telemetry data analysis, electrical fault tests and fire tests, when combined, identified a very specific series of fault conditions present on July 30, 2021 that could lead to a fire event.

Fire Origin and Cause Determination

The origin of the fire was MP-1 and the most likely root cause of the fire was a leak within the liquid cooling system of MP-1 causing arcing in the power electronics of the Megapack's battery modules. This resulted in heating of the battery module's lithium-ion cells that led to a propagating thermal runaway event and the fire.

Other possible fire causes were considered during the fire cause investigation; however, the above sequence of events was the only fire cause scenario that fits all the evidence collected and analyzed to date.

Contributory Factors

A number of factors contributed to this incident. Had these contributory factors not been present, the initial fault condition would likely have been identified and interrupted (either manually or automatically) before it escalated into a fire event. These contributory factors include:

1. The supervisory control and data acquisition (SCADA) system for a Megapack required 24 hours to setup a connection for new equipment (i.e., a new Megapack) to provide full telemetry data functionality and remote monitoring by Tesla operators. Since VBB was still in the installation and commissioning phase of the project (i.e., not in operation), MP-1 had only been in service for 13 hours prior to being switched off via the keylock switch on the morning of the fire. As such, MP-1 had not been on-line for the required 24 hours, which prevented this unit from transmitting telemetry data (internal temperatures, fault alarms, etc.) to Tesla's off-site control facility on the morning of the fire.
2. The keylock switch for MP-1 was operated correctly on the morning of the fire to turn MP-1 off as the unit was not required for commissioning and testing that morning; however, this action caused telemetry systems, fault monitoring, and electrical fault safety devices[6] to be disabled or operate with

[4] Victoria's energy safety regulator

[5] Victoria's health and safety regulator

[6] These elements include, among other devices, fuses at the cell and module level for localized fault current interruption and a battery module pyro disconnect that severs the electrical connection of the battery module when a fault current is passing through the battery module.

only limited functionality. This prevented some of the safety features of MP-1 from actively monitoring and interrupting the electrical fault conditions before escalating into a fire event.

3. The exposure of liquid coolant onto the battery modules likely disabled the power supply to the circuit that actuates the pyro disconnect.[7] With a power supply failure, the pyro disconnect would not receive a signal to sever and would not be able to interrupt a fault current passing through the battery module prior to it escalating into a fire event.

Fire Propagation Investigation

The VBB fire investigation process involved analyzing not only the root cause of the initial fire in MP-1 but also the root cause of the fire propagation into MP-2. The Megapack has been designed to be installed in close proximity to each other without fire propagating to adjacent units. The design objective of the Megapack in terms of limiting fire propagation was mainly reliant on the thermal insulation of the Megapack's exterior vertical steel panels and the sheer mass of the battery modules acting as a heat sink (i.e., they are difficult to heat up). With this thermal insulation, the Megapack spacing can be as close as 15 cm (6 in) to the sides and back of each unit with 2.4 m (8 ft) aisles in front of each Megapack, as shown in Figure 1. This product spacing has been validated in UL9540A unit level tests.[8] Similar to the fire origin and cause investigation, the on-site inspections were supported simultaneously with an analysis of telemetry data (such as internal temperatures) from MP-2 and fire testing. The on-site investigation findings, the telemetry data analysis and fire tests, when combined, identified a scenario where Megapack to Megapack fire propagation can occur.

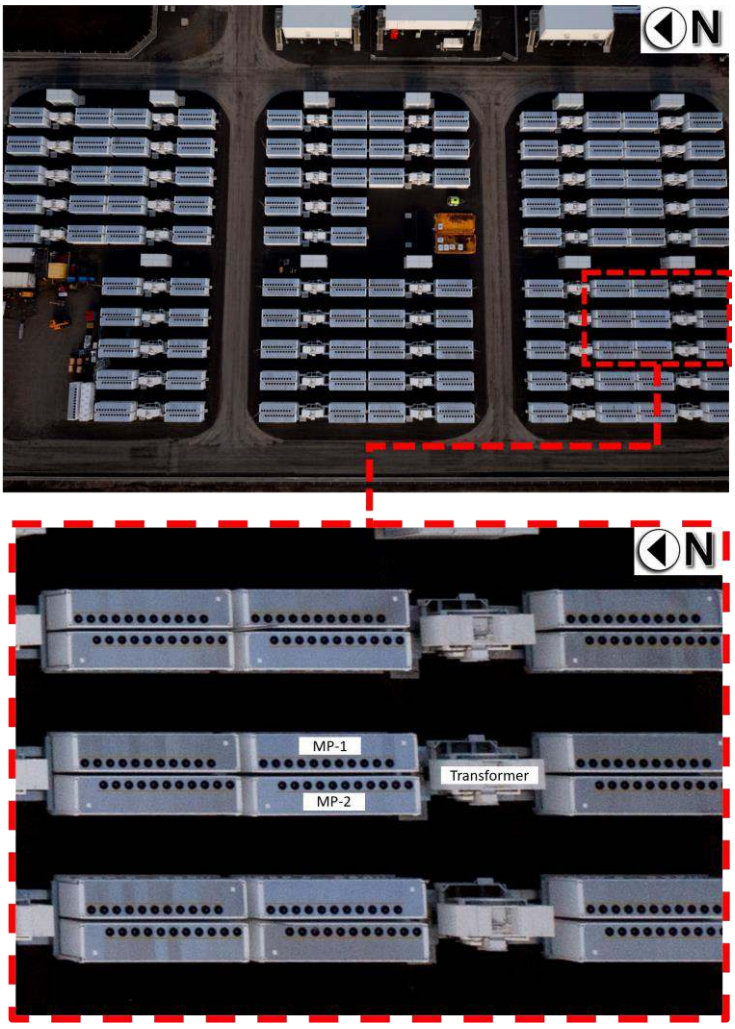


Figure 1 VBB Megapack layout (top) and area of fire origin (bottom)

[7] The pyro disconnect is a Tesla proprietary shunt-controlled pyrotechnic fuse that allows for rapid one-time actuation. There is one pyro disconnect per battery module.

[8] UL9540A, *Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems*. UL9540A is a test method developed by UL to address fire safety concerns with BESS. The test method provides a method to evaluate thermal runaway and fire propagation at the cell level, module level, and unit level. In addition to cell and module level tests, Tesla performed unit level tests to evaluate, among other fire safety characteristics, the potential for fire propagation from Megapack-to-Megapack. During unit level testing, fire propagation did not occur between Megapacks when they were installed with a spacing of 15 cm (6 in) to the sides and back of each unit.

Fire Propagation Determination

Flames exiting the roof of MP-1 were significantly impacted by the wind conditions at the time of the fire. Wind speeds were recorded between 20-30 knots[9] which pushed the flames exiting the roof of MP-1 towards the roof of MP-2. This direct flame impingement on the top of the thermal roof of MP-2 ignited the internal components of MP-2, most notably, the plastic overpressure vents that seal the battery bay[10] from the thermal roof. Once ignited, the overpressure vents provided a direct path for flames and hot gases to enter into the battery bays, thus exposing the battery modules of MP-2 to fire and/or elevated temperatures. Exposed to temperatures above their thermal runaway threshold of 139°C (282°F), the cells within the battery modules eventually failed and became involved in the fire.

Other possible fire propagation root causes were considered during the investigation; however, the above sequence of events was the only fire propagation scenario that fits all the evidence collected and analyzed to date. Of note, at the time when fire was observed within the thermal roof of MP-2, internal cell temperature readings of MP-2 had only increased by 1°C (1.8°F) from 40°C to 41°C (104°F to 105.8°F)[11] Around the same time that fire was observed within the thermal roof of MP-2, around 11:57 AM (approximately 2 hours into the fire event), communication was lost to the unit and no additional telemetry data was transmitted. However, given the internal cell temperatures of MP-2 had only recorded a 1°C (1.8°F) temperature rise 2 hours into the fire event and while the unit's roof was actively on fire, fire propagation across the 15 cm (6 in) gap via heat transfer is not the root cause of the fire propagation. Furthermore, this telemetry data from MP-2 demonstrates that the Megapack's thermal insulation can provide significant thermal protection in the event of a fire within an adjacent Megapack installed only 15 cm (6 in) away.

Contributory Factors

The wind was the dominant contributory factor in the propagation of fire from MP-1 to MP-2. At the time of the fire, a 20-30 knot (37-56 km/hr, 23-35 mph) wind was recorded out of the north. The wind conditions at the time of the fire pushed the flames exiting out of the top of MP-1 towards the top of MP-2 leading to direct flame impingement on the thermal roof of MP-2. This type of flame behavior was not observed during previous product testing or regulatory testing per UL9540A. In UL9540A unit level testing, the maximum wind speed permitted[12] during the test is 10.4 knots (19.3 km/hr, 12.0 mph); whereas, wind conditions during the VBB fire were two to three times greater in magnitude. As such, the wind conditions during the VBB fire appear to have identified a weakness in the Megapack's thermal roof design (unprotected, plastic overpressure vents in the ceiling of the battery bays) that allows Megapack-to-Megapack fire propagation. This weakness was not identified previously during product or regulatory testing and does not invalidate the Megapack's UL9540A certification, as the cause of fire propagation was primarily due to an environmental condition (wind) that is not captured in the UL9540A test method.

---

9 This equates to 37-56 kilometers per hour (km/hr) or 23-35 miles per hour (mph).

10 The battery bay is an IP66 enclosure that houses the battery modules. It is distinct from the thermal roof installed above it. Plastic overpressure vents are installed in the ceiling of the battery bay, sealing the two enclosures from one another.

11 As a reference, the Megapack's normal operating cell temperature is between 20-50°C and cell thermal runaway does not occur until 139°C (98°C above cell temperatures of MP-2 before telemetry data was lost).

12 This threshold is necessary for test reliability and reproducibility. If wind conditions are not bounded in some fashion in an outdoor fire test, large variances on product performance could be introduced due to varying wind conditions.

Mitigations

The investigation of the VBB fire identified several gaps in Tesla's commissioning procedures, electrical fault protection devices and thermal roof design. Since the fire, Tesla has implemented a number of procedural, firmware, and hardware mitigations to address these gaps. These mitigations have been applied to all existing and any future Megapack installations and include:

Procedural Mitigations:

- Improved inspection of the coolant system for leaks during Megapack assembly and during end-of-line testing to reduce the likelihood of future coolant leaks.
- Reduce the telemetry setup connection time for new Megapacks from 24 hours to 1 hour to ensure new equipment is transmitting telemetry data (internal temperatures, fault alarms, etc.) to Tesla's off-site control facility for remote monitoring.
- Avoid utilizing the Megapack's keylock switch during commissioning or operation unless the unit is actively being serviced. This procedural mitigation ensures telemetry, fault monitoring, and electrical fault safety devices (such as the pyro disconnect) are active while the Megapack is idle (such as during testing and commissioning).

Firmware Mitigations:

- Added additional alarms to the coolant system's telemetry data to identify and respond (either manually or automatically) to a possible coolant leak.
- Keep all electrical safety protection devices active, regardless of keylock switch position or system state. This firmware mitigation allows electrical safety protection devices (such as the pyro disconnect) to remain in an active mode, capable of actuating when electrical faults occur at the battery modules, no matter what the system status is.
- Active monitoring and control of the pyro disconnect's power supply circuit. In the event of a power supply failure (either through an external event such as a coolant exposure or some other means), the Megapack will automatically actuate the pyro disconnect prior to the loss of its power supply.

Hardware Mitigations

- Installation of newly designed, thermally insulated steel vent shields within the thermal roof of all Megapacks. These vent shields protect the plastic overpressure vents from direct flame impingement or hot gas intrusion, thus keeping the IP66 battery bay enclosures isolated from a fire above in the thermal roof. Their performance was validated through a series of fire tests, including unit level fire testing of entire Megapack units.[13] The vent shields are placed over the top of the overpressure vents and will come standard on all new Megapack installations. For existing Megapacks, the vent shields can be installed in the field (retrofit) with minimal effort or disruption to the unit. At the time of this report, the vent shields are nearing production stage and will be retrofitted to applicable Megapack sites shortly.

[13] The tests confirmed that, even with the entire thermal roof fully involved in fire, the overpressure vents will not ignite and the battery modules below remain relatively unaffected by the fire above. For instance, the cells within the battery modules saw a less than 1°C temperature rise while the entire thermal roof was fully involved in fire.

Emergency Response

Beyond the origin and cause and propagation investigations, another key aspect of the VBB fire was the emergency response. The CFA is the responsible fire service organization for VBB, and the facility is in their initial response jurisdiction. The location of the VBB facility is in a semi-rural location. The nearest fire station is the CFA Lovely Banks, approximately 4 km (2.5 miles) distance from VBB and thus relatively close, though other resources had more extended travel distances.

Upon arrival around 10:30 AM, CFA immediately established incident command (IC) in accordance with their protocols, and the IC worked closely with the facility representatives and subject matter experts (SMEs). This close coordination continued throughout the entire event. The facility was evacuated and all-site personnel accounted-for upon notification of the emergency event and the commencement of fire service operations. A 25 m (82 ft) perimeter was established around MP-1 while water application and cooling strategies were discussed with facility representatives and subject matter experts (SMEs). The decision was made to provide exposure protection to Megapacks and transformers adjacent to MP-1 and MP-2 using water hose lines, as recommended in Tesla's ERG. The fire eventually propagated into MP-2; however, flame spread did not advance any further than MP-1 and MP-2. The two Megapacks were permitted to burn themselves out, during which time the CFA did not directly apply water into or onto either Megapack. By 4:00 PM (approximately six hours after the start of the event), visible flames had subdued and a fire watch was instituted. The CFA continued to monitor the site for the next three days before deeming it under control on August 2, 2021, at which time, the fire investigation began.

Key Takeaways

A thorough review of the VBB fire emergency response yielded the following key takeaways:

- Effective Pre-incident Planning: VBB had both an Emergency Action Plan (EAP) and an Emergency Response Plan (ERP). Both plans were available to emergency responders and were effectively used during the VBB fire. For example, all site employees and contractors followed proper evacuation protocols during the fire and as a result, no injuries occurred to those personnel.
- Coordination with SMEs: VBB had thorough pre-incident plans that clearly identified the SMEs, how to contact them, their role and other key tasks. It was reported that the facility SMEs stayed in close contact with the CFA IC throughout the VBB fire, providing valuable information and expertise for the CFA to draw upon. For example, site representatives and SMEs worked closely with the CFA in determining water application and cooling strategies of adjacent exposures.
- Water Application: A key question regarding water application is the necessary amount and duration for effective fire containment. Tesla's design philosophy is based on inherent passive protection (i.e., thermal insulation), with minimal dependence on active firefighting measures like external hose lines. As such, water was not aimed at suppressing the fire but rather protecting the exposures as directed by Tesla's ERG and the SMEs on site. All available data and visual observations of the fire indicates water had limited effectiveness in terms of reducing or stopping fire propagation from Megapack-to-Megapack. The thermal insulation appears to be the dominant factor in reducing heat transfer between adjacent Megapacks. However, water was effectively used on other exposures

(transformers, electrical equipment, etc.) to protect that equipment, which are not designed with the same level of protection as a Megapack is (i.e., thermal insulation).[14]

- The fire protection design approach of the Megapack has inherent advantages over other BESS designs in terms of safety to emergency responders. The Megapack approach minimizes the likelihood of fire spread using passive compartmentation and separation, eliminates the danger to fire fighters of an overpressure event due to design features and a lack of confinement (e.g., outdoor versus indoor), does not rely on active firefighting measures like external hose lines and minimizes the dangers from stranded electrical energy to those involved with overhaul and de-commissioning with a fire response approach permitting the Megapack to burn itself out.

Environmental Concerns

The Environment Protection Authority Victoria (EPA) deployed two mobile air quality monitors within 2 km (1.2 miles) of the VBB site. Locations were chosen where there was potential to impact the local community. The EPA monitors confirmed "good air quality in the local community" after the incident; however, the measurements were not taken during the peak of the fire event. They were sampled around 6:00 PM, or approximately 2 hours after the fire was out. Therefore, the data cannot be used to understand the airborne hazards during the actual fire event. The data does demonstrate that two hours after the fire event, the air quality in the surrounding area was "good" and no long-lasting air quality concerns arose from the fire event.[15]

During the fire event, the CFA coordinated with site personnel to control the water run-off from fire hoses into a catchment. Water samples, collected by Tesla site personnel under the supervision of CFA, were extracted from the catchment. Laboratory results from those samples indicated that the likelihood of the fire having a material impact on the water was minimal. After the incident, as a precaution, the water was removed from the catchment, via suction trucks, and was transported to a licensed waste facility for treatment and disposal. It is estimated that approximately 900,000 liters of water was disposed of from the site after the event.

Community Concerns

Neoen, the project developer and owner, pro-actively engaged with the local community during and following the VBB fire. These engagements included door-to-door visits, phone calls and emails with the residential and agricultural properties within a 2-3 km (1.2-1.9 mile) radius of the VBB site. Neoen found their prior community outreach during the project planning stages to be invaluable as this outreach provided up-to-date contact information for Neoen when reaching out to the local community during and following the fire. In addition, Neoen formed an executive stakeholder steering committee compromising of key organizations within 24 hours of the incident. With multiple parties involved in the emergency response to the fire event

[14] At the time of this report, final fire department reports were not available for review and inclusion. As that information becomes available, additional information regarding water usage and effectiveness may require inclusion in this report. Although the effectiveness of external water in a Megapack fire may be limited, water should still be made available for exposure protection and other unanticipated events in the future, as required by any applicable regulatory requirements.

[15] It should be noted that prior regulatory testing (UL 9540A module level fire testing) has shown that the products of combustion of a Megapack battery module can include flammable and nonflammable gases. Based on those regulatory tests, the flammable gases were found to be below their lower flammable limit (LFL) and would not pose a deflagration or explosion risk to first responders or the general public. The nonflammable gases were found to be comparable to the smoke you would encounter in a typical Class A structure fire and do not contain any unique, or atypical, gases beyond what you would find in the combustion of modern combustible materials.

actively participating in the steering committee, this helped ensure that from the outset communication was timely, efficient, well-coordinated across different organizations and accurate.

In addition to the community outreach, Neoen and Tesla also briefed multiple industry, State and Federal Government Departments and Agencies immediately following the VBB fire and at the conclusion of the investigation process. These briefings helped ensure the wider energy sector with interests in BESS were able to be kept directly informed as information became available.

Overhaul and Remediation

On July 29, 2021 nearly half of the Megapacks had been installed and the site was in the testing and commissioning stage of the project. Following the fire event on July 30, 2021, fire department personnel, regulatory agencies and other emergency responders remained on-site for precautionary purposes until August 2, 2021. At that time the site was turned over for regulatory fire investigations to begin. On-site fire investigations started on August 3, 2021 and continued until August 12, 2021. During this time, starting on August 6, 2021, the site was permitted to continue the installation of Megapacks while the area around MP-1 remained cordoned off for the investigation. On September 23rd, 2021, less than two months after the fire, VBB was re-energized and testing and commissioning restarted. Remediation of the damaged equipment followed shortly after, and lasted a total of three days. All testing and commissioning efforts were completed without any further incidents and on December 8, 2021, VBB officially opened.

Lessons Learned

The VBB fire exposed a number of unlikely factors that, when combined, contributed to the fire initiation as well as its propagation to a neighboring unit. This collection of factors had never before been encountered during previous Megapack installations, operation and/or regulatory product testing. This section summarizes those factors as well as the emergency response to the fire, discusses the lessons learned from this fire event, and highlights the mitigations Tesla has implemented in response.

1. Commissioning Procedures

Lessons learned related to commissioning procedures include: (1) limited supervision/monitoring of telemetry data during the first 24 hours of commissioning and (2) the use of the keylock switch during commissioning and testing. These two factors prevented MP-1 from transmitting telemetry data (internal temperatures, fault alarms, etc.) to Tesla's control facility and placed critical electrical fault safety devices (such as the pyro disconnect) in a state of limited functionality, reducing the Megapack's ability to actively monitor and interrupt electrical fault conditions prior to them escalating into a fire event.

Since the VBB fire, Tesla has modified their commissioning procedures to reduce the telemetry setup connection time for new Megapacks from 24 hours to 1 hour and to avoid utilizing the Megapack's keylock switch unless the unit is actively being serviced.

2. Electrical Fault Protection Devices

Lessons learned related to electrical fault protection devices include: (1) coolant leak alarms; (2) the pyro disconnect being unable to interrupt fault currents when the Megapack is off via the keylock switch and (3) the pyro disconnect likely being disabled due to a power supply loss to the circuit that actuates it. These three factors prevented the pyro disconnect of MP-1 from actively monitoring and interrupting the electrical fault conditions before escalating into a fire event.

Since the VBB fire, Tesla has implemented a number of firmware mitigations that keep all electrical safety protection devices active, regardless of keylock switch position or system state, and to actively monitor and control the pyro disconnect's power supply circuit. Furthermore, Tesla has added additional alarms to better identify and respond (either manually or automatically) to coolant leaks. Additionally, although this fire event was likely initiated by a coolant leak, unexpected failures of other internal components of the Megapack could create similar damage to the battery modules. These new firmware mitigations do not only address damage from a coolant leak. They also permit the Megapack to better identify, respond, contain and isolate issues within the battery modules due to failures of other internal components, should they occur in the future.

3. Fire Propagation

Lessons learned related to fire propagation include: (1) the significant role external, environmental conditions (such as wind) can have on a Megapack fire and (2) the identification of a weakness in the thermal roof design that permits Megapack-to-Megapack fire propagation. These two factors led to direct flame impingement on the plastic overpressure vents that seal the battery bay from the thermal roof. With a direct path for flames and hot gases to enter into the battery bays, the cells within the battery modules of MP-2 failed and became involved in the fire.

Since the VBB fire, Tesla has devised (and validated through extensive testing) a hardware mitigation that protects the overpressure vents from direct flame impingement or hot gas intrusion via the installation of new, thermally insulated, steel vent shields. The vent shields are placed on top of the overpressure vents and will come standard on all new Megapack installations. For existing Megapacks, the vent shields can be easily installed in the field. At the time of this report, the vent shields are nearing production stage and will be retrofitted to applicable Megapack sites shortly.

4. Megapack Spacing

Lessons learned related to Megapack spacing include: no changes are required to the installation practices of the Megapack with the vent shield mitigation (as described above) in place. Based on an analysis of telemetry data within MP-2 during the VBB fire, the Megapack's thermal insulation can provide significant thermal protection in the event of a fire within an adjacent Megapack installed 15 cm (6 in) away. The internal cell temperatures of MP-2 only increased by 1°C (1.8°F), from 40°C to 41°C (104°F to 105.8°F), before communication was lost to the unit, presumably due to fire, around 11:57 AM (approximately 2 hours into the fire event). Fire propagation was triggered by the weakness in the thermal roof, as described above in #3, and not due to heat transfer via the 15 cm (6 in) gap between Megapacks. With the vent shield mitigation in place, the weakness has been addressed and validated through unit level fire testing (i.e., tests involving the ignition of the Megapack's thermal roof). These tests confirmed that, even with the thermal roof fully involved in a fire, the overpressure vents will not ignite and the battery modules remain relatively unaffected with internal cell temperatures rising less than 1°C.

5. Emergency Response

Lessons learned from the emergency response to the VBB fire include: (1) effective pre-incident planning is invaluable and can reduce the likelihood of injuries; (2) coordination with SMEs, either on site or remotely, can provide critical expertise and system information for emergency responders to draw upon; (3) the effectiveness of applying water directly to adjacent Megapacks appears to provide limited benefits; however, water application to other electrical equipment, with inherently less fire protection built into their designs (such as transformers), can be a useful tactic to protect that equipment; (4) the fire protection design

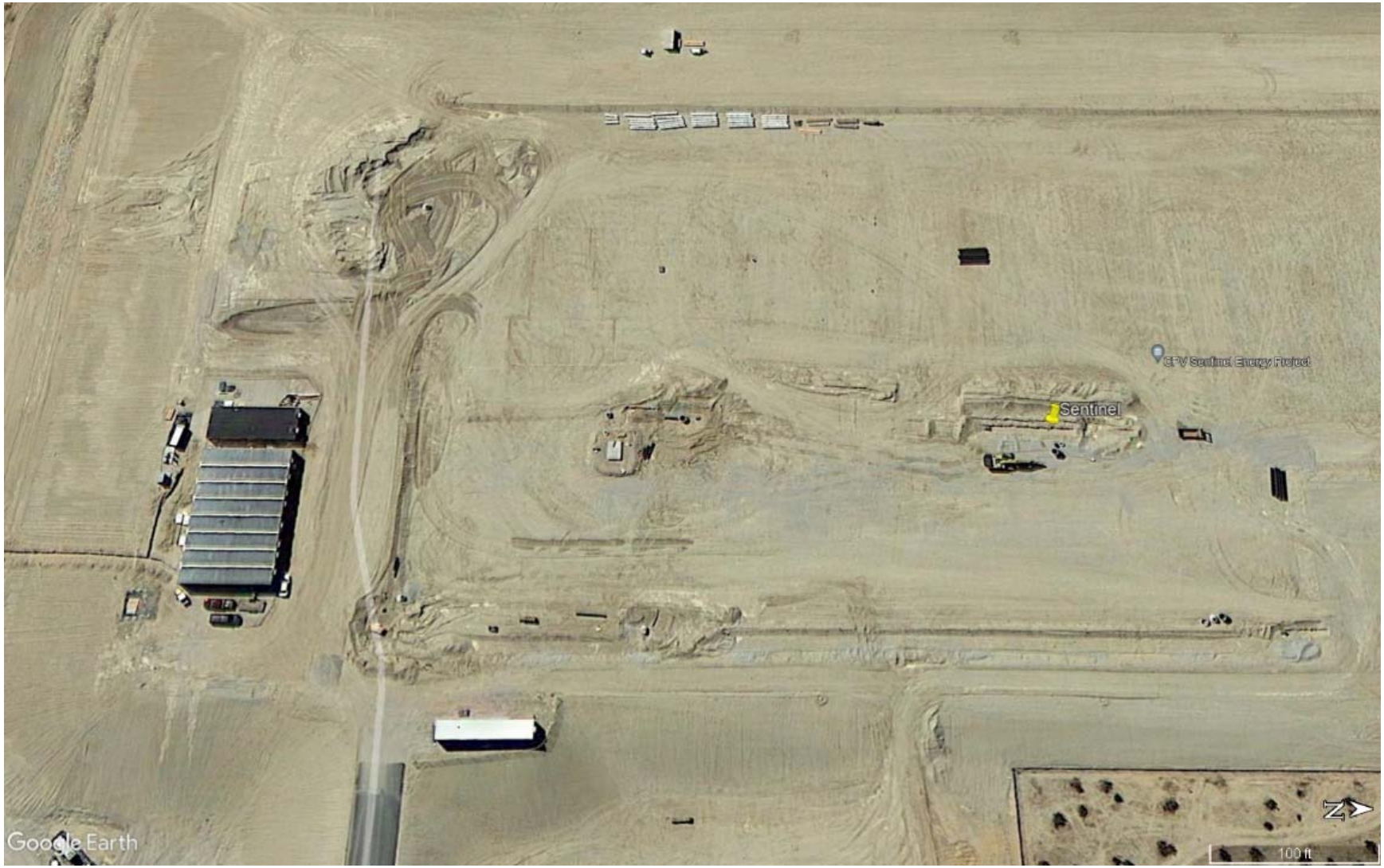
approach of the Megapack has inherent advantages over other BESS designs in terms of safety to emergency responders; (5) the EPA indicated that there was “good” air quality 2 hours after the fire demonstrating that no long-lasting air quality concerns arose from the fire event; (6) water samples indicated that the likelihood of the fire having a material impact on firefighting water was minimal; (7) prior community engagement during the project planning stages is invaluable as it enabled Neoen to quickly update the local community and address immediate questions and concerns; (8) early, factual and where possible, face-to-face engagement with the local community is essential when a fire event is unfolding to keep the general public informed; (9) an executive stakeholder steering committee from the key organizations involved in the emergency response can help ensure that any pubic communications are timely, efficient, coordinated and accurate; and (10) effective coordination between stakeholders at the site allowed for rapid and thorough handover process after the incident, the swift and safe decommissioning of the damaged units and the site’s quick return to service.

In summary, the VBB fire event proceeded in accordance with its fire protection design and pre-incident planning. It presented no unusual, unexpected, or surprising characteristics (i.e., explosions) or resulted in any injuries to site personnel, the general public or emergency responders. It was isolated to the units directly involved, had minimal environmental impact, did not adversely impact the electrical grid, and had appreciably short mission interruption.

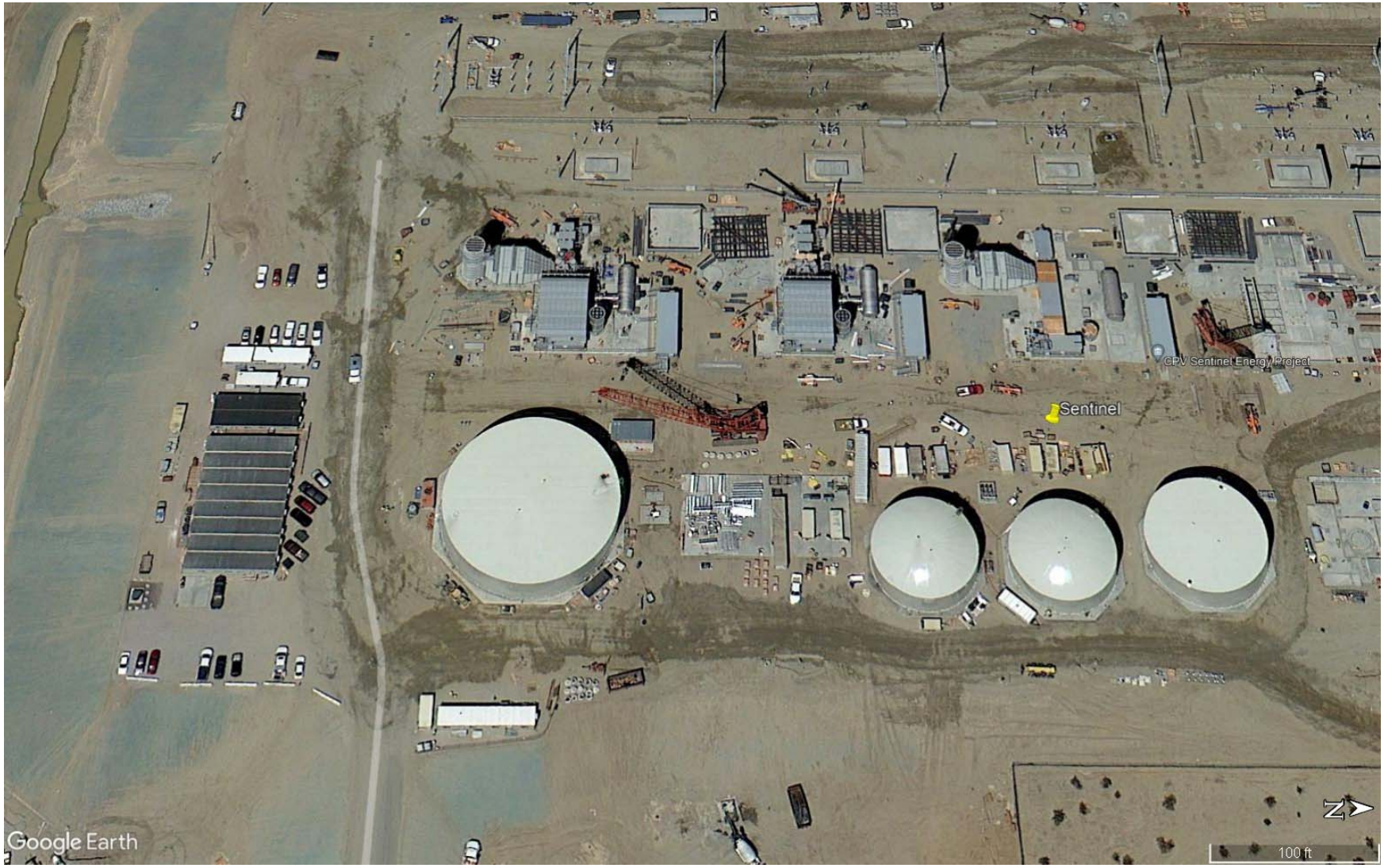
Attachment 9.4

Original Construction Ground Disturbance Photographs

Sentinel Energy Center June 2011



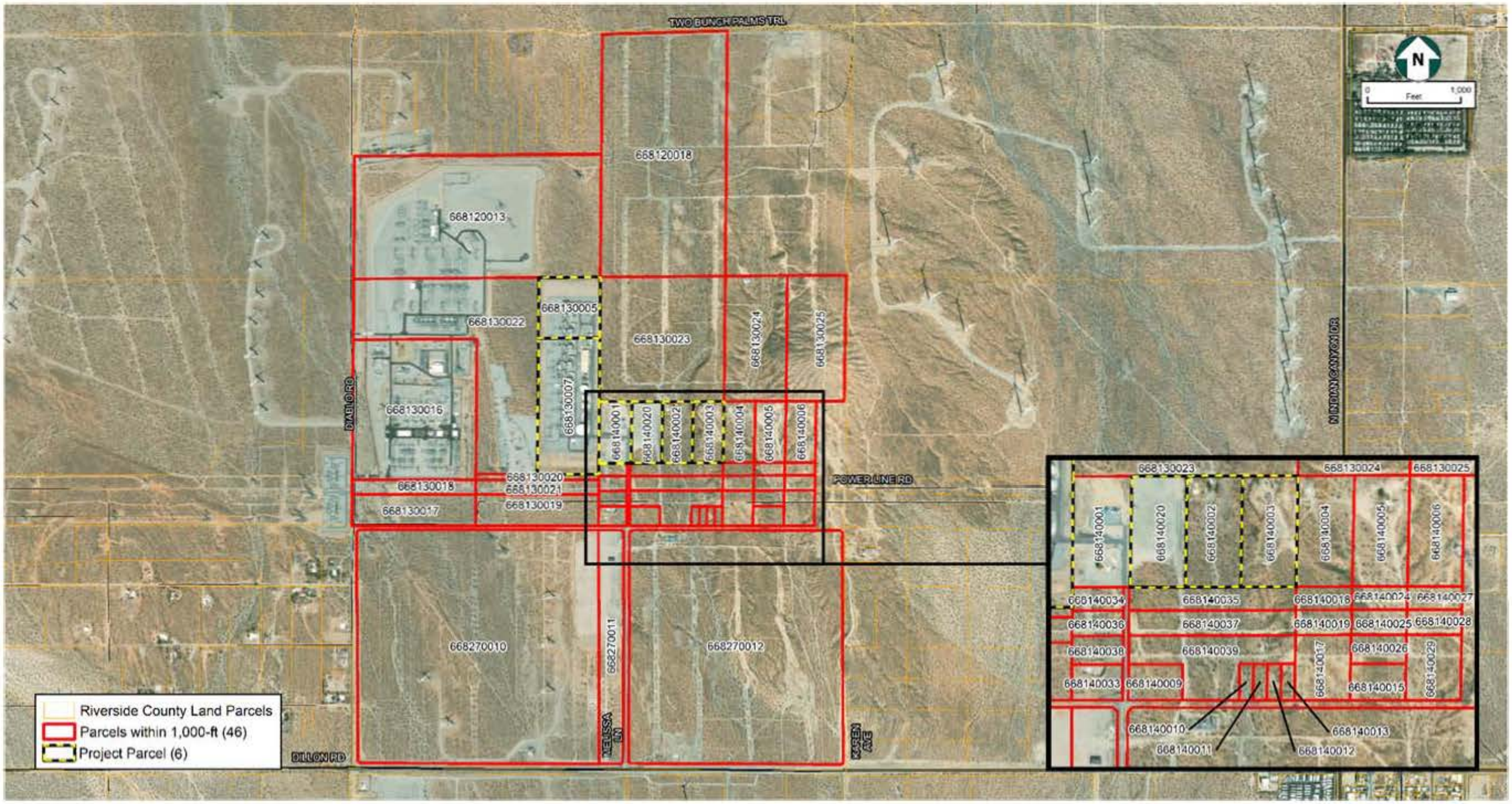
Sentinel Energy Center September 2011



Sentinel Energy Center June 2012

Attachment 9.6

Property Owner Map


TWO BUNCH PALMS TRL
N
0 Feet 1,000
668120018
668120013
668130005
668130022
668130023
668130024
668130025
668130016
668130007
668140001
668140020
668140002
668140003
668140004
668140005
668140006
DIABLO RD
POWER LINE RD
668130020
668130021
668130019
668130018
668130017
N INDIAN CANYON DR
668270010
668270011
668270012
MELISSA LN
KAREN AVE
DILLON RD
668140034
668140035
668140016
668140024
668140027
668140036
668140037
668140019
668140025
668140028
668140038
668140039
668140017
668140026
668140029
668140033
668140009
668140015
668140010
668140011
668140012
668140013
Riverside County Land Parcels
Parcels within 1,000-ft (46)
Project Parcel (6)