

PLANNING AND ZONING COMMISSION AGENDA

REGULAR MEETING | MAY 23, 2024 AT 6:00 PM
CITY COUNCIL CHAMBERS | 405 MUNICIPAL DRIVE , KENNEDALE, TX 76060

I. CALL TO ORDER

To address the Planning and Zoning Commission regarding an agenda item, submit a 'Request to Speak' form before the meeting begins. Speakers are allotted three (3) minutes, must limit their comments to the subject indicated on the form, and should address the Planning and Zoning Commission as a whole, rather than individual members or staff. Pursuant to Texas Government Code §551.071, the Planning and Zoning Commission reserves the right to adjourn into Executive (Closed) Session at any time during the meeting to seek legal advice from the City Attorney on any item posted on the agenda.

A. ROLL CALL

II. VISITOR AND CITIZEN FORUM

At this time, any person may address the Planning and Zoning Commission about items not on the agenda. Rules and procedures for addressing the Planning and Zoning Commission are included under "I. CALL TO ORDER". Neither formal action nor discussion may occur at this time. Those wishing, instead, to speak on an agenda item should indicate their desire to speak as the Planning and Zoning Commission considers that item.

III. REGULAR SESSION

A. CONSENT AGENDA

These matters have appeared on previous agendas, require little or no deliberation, or are considered routine or ministerial tasks. If discussion is desired, items may be removed for separate consideration.

1. Approval of the minutes from the April 25, 2024 Regular Meeting

B. ITEMS FOR INDIVIDUAL CONSIDERATION

1. PZ CASE #24-08 Consider approval for a proposed Conditional Use Permit as required by Section 24.2 (C) of the Unified Development Code for "Battery Energy Storage Systems," a new land use, located at 509 S New Hope Rd, Tract 1EE & A1327 TRS 2B01 & 2B04, Abstract 378, situated in the Cannon E C Survey, and 501 S NEW HOPE RD, Block 1, Lot 1, of the Kim Addition, and City of Kennedale, Tarrant County, Texas

C. PUBLIC HEARINGS

1. PZ CASE #24-09 Conduct a public hearing and consider a request for a zoning change from "I-Industrial District" to "MH-Manufactured Home District" at 716 W Kennedale Parkway, Block 1, Lot 26, of the Woodlea Acres Addition, City of Kennedale, Tarrant County, Texas.

IV. EXECUTIVE SESSION

The Planning and Zoning Commission reserves the right to meet in Executive (Closed) Session at any time during the meeting pursuant to the below cited sections of the Texas Government Code:

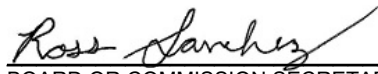
- A. **PURSUANT TO §551.071** — Consultation with the City Attorney pertaining to any matter in which the duty of the City Attorney under the Texas Disciplinary Rules of Professional Conduct may conflict with the Open Meetings Act, including discussion of any item posted on the agenda, legal issues regarding the Open Meetings Act.
- B. **PURSUANT TO §551.072** — Deliberation regarding the purchase, exchange, lease, or value of real property.
- C. **PURSUANT TO §551.074** — Deliberate the appointment, employment, evaluation, reassignment, duties, discipline, or dismissal of a public officer or employee; or to hear a complaint or charge against an officer or employee.
- D. **PURSUANT TO §551.087** — (1) Deliberation regarding commercial or financial information that the governmental body has received from a business prospect that the governmental body seeks to have locate, stay, or expand in or near the territory of the governmental body and with which the governmental body is conducting economic development negotiations; or (2) to deliberate the offer of a financial or other incentive to a business prospect described by Subdivision.

**V. RECONVENE INTO OPEN SESSION, AND TAKE ACTION NECESSARY
PURSUANT TO EXECUTIVE SESSION, IF NEEDED**

VI. ADJOURNMENT

CERTIFICATION

I DO HEREBY CERTIFY THAT THE MAY 23, 2024 PLANNING AND ZONING COMMISSION AGENDA WAS POSTED INSIDE THE MAIN ENTRANCE OF CITY HALL (405 MUNICIPAL DRIVE), IN A PLACE CONVENIENT AND READILY ACCESSIBLE TO THE GENERAL PUBLIC AT ALL TIMES; AND THAT SAID AGENDA WAS POSTED AT LEAST SEVENTY-TWO (72) HOURS PRECEDING THE SCHEDULED TIME OF SAID MEETING, IN ACCORDANCE WITH CHAPTER 551 OF THE TEXAS GOVERNMENT CODE.


BOARD OR COMMISSION SECRETARY

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STAFF REPORT TO THE PLANNING AND ZONING COMMISSION

MEETING DATE: MAY 23, 2024

AGENDA ITEM NUMBER: CONSENT AGENDA ITEM III.A.

SUBJECT

CONSENT AGENDA

These matters have appeared on previous agendas, require little or no deliberation, or are considered routine or ministerial tasks. If discussion is desired, items may be removed for separate consideration.

ORIGINATED BY

SUMMARY

RECOMMENDATION

ATTACHMENTS



**STAFF REPORT
TO THE PLANNING AND ZONING COMMISSION**

MEETING DATE: MAY 23, 2024

AGENDA ITEM NUMBER: CONSENT AGENDA ITEM III.A.1.

SUBJECT
Approval of the minutes from the April 25, 2024 Regular Meeting

ORIGINATED BY

SUMMARY

RECOMMENDATION

ATTACHMENTS

1.	Minutes unsigned	Minutes unsigned.pdf
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PLANNING AND ZONING COMMISSION MINUTES
REGULAR MEETING | APRIL 25, 2024 AT 6:00 PM
CITY HALL COUNCIL CHAMBERS | 405 MUNICIPAL DRIVE, KENNEDALE, TX 76060

I. CALL TO ORDER

Chairman Michael Brown called the meeting to order at 6:01 p.m.

A. ROLL CALL

PRESENT: Andrew Malkowski, Kevin Guo, Socorro Martinez; **ABSENT:**

STAFF: Director of Community Development Nathan Gonzales, City Manager Darrell Hull, Planning Tech Ross Sanchez

II. VISITOR AND CITIZEN FORUM

III. REGULAR SESSION

A. CONSENT AGENDA

These matters have appeared on previous agendas, require little or no deliberation, or are considered routine or ministerial tasks. If discussion is desired, items may be removed for separate consideration.

1. Approval of the minutes from the February 29, 2024 Special Meeting

Motion: Approve

Action: Approval of the minutes from the February 29, 2024 Special Meeting

Moved By Andrew Malkowski, **Seconded By** Kevin Guo

Motion passed unanimously

B. ITEMS FOR INDIVIDUAL CONSIDERATION

1. Consider a request for Final Plat for Emerald Crest Estates to create Lots 1 through 10, and Lot 1X, being Lots R1 through 5R and 6, Block 1, Amending Plat of Emerald Crest Estates, an Addition to the City of Kennedale, Tarrant County, Texas

Motion: Approve

Action: Consider a request for Final Plat for Emerald Crest Estates to create Lots 1 through 10, and Lot 1X, being Lots R1 through 5R and 6, Block 1, Amending Plat of Emerald Crest Estates, an Addition to the City of Kennedale, Tarrant County, Texas

Moved By Andrew Malkowski, **Seconded By** Kevin Guo

Motion passed unanimously

C. PUBLIC HEARINGS

1. PZ CASE #24-08 to conduct a public hearing and consider a proposed Conditional Use Permit as required by Section 24.2 (C) of the Unified Development Code for "Battery Energy Storage Systems," a new land use, located at 509 S New Hope Rd, Tract 1EE & A1327 TRS 2B01 & 2B04, Abstract 378, situated in the Cannon E C Survey, and 501 S NEW HOPE RD, Block 1, Lot 1, of the Kim Addition, and City of Kennedale, Tarrant County, Texas

Community Development Director Nathan Gonzales presented his staff report to the Planning & Zoning Commission. There were some questions raised by the board about the safety and size of the battery energy storage systems. Some of the staff members of Cypress Creek Renewables were at the meeting and answered some of the questions raised by the board. They also gave a more in-depth presentation about the battery energy storage systems.

The public hearing was opened at 7:26 p.m. for discussion

George Horner, 1004 E Kennedale Pkwy, spoke about his concern for the safety factor of the battery energy storage system and fire containment.

Demetric Norwood, 600 S New Hope Rd, spoke to the board about the tax benefit this would give the city as well as his concern for safety.

Russell Fincher, 510 S New Hope Rd, expressed his concern for the safety factor of this case. He wanted to know if the city would be liable to pay for more firefighting training needed to contain a fire should any occur.

Luann Hull, 416 S New Hope Rd, expressed her concern for safety, particularly with the nearby gas line.

The public hearing was closed at 7:34 p.m.

Motion: Table PZ Case #24-08 to the next scheduled P&Z meeting pending legal consultation with the City Attorney for approval

Action: PZ CASE #24-08 to conduct a public hearing and consider a proposed Conditional Use Permit as required by Section 24.2 (C) of the Unified Development Code for "Battery Energy Storage Systems," a new land use, located at 509 S New Hope Rd, Tract 1EE & A1327 TRS 2B01 & 2B04, Abstract 378, situated in the Cannon E C Survey, and 501 S NEW HOPE RD, Block 1, Lot 1, of the Kim Addition, and City of Kennedale, Tarrant County, Texas

Moved By Andrew Malkowski, **Seconded By** Michael Brown
Motion passed unanimously

IV. EXECUTIVE SESSION

A. **PURSUANT TO §551.071** — Consultation with the City Attorney pertaining to any matter in which the duty of the City Attorney under the Texas Disciplinary Rules of Professional Conduct may conflict with the Open Meetings Act, including discussion of any item posted on the agenda, legal issues regarding the Open Meetings Act.

B. **PURSUANT TO §551.072** — Deliberation regarding the purchase, exchange, lease, or value of real property.

C. **PURSUANT TO §551.074** — Deliberate the appointment, employment, evaluation, reassignment, duties, discipline, or dismissal of a public officer or employee; or to hear a complaint or charge against an officer or employee.

D. **PURSUANT TO §551.087** — (1) Deliberation regarding commercial or financial information that the governmental body has received from a business prospect that the governmental body seeks to have locate, stay, or expand in or near the territory of the governmental body and with which the governmental body is conducting economic development negotiations; or (2) to deliberate the offer of a financial or other incentive to a business prospect described by Subdivision.

V. RECONVENE INTO OPEN SESSION, AND TAKE ACTION NECESSARY PURSUANT TO EXECUTIVE SESSION, IF NEEDED

VI. ADJOURNMENT

Motion: Adjourn

Action: ADJOURNMENT

Moved By Andrew Malkowski, **Seconded By** Socorro Martinez

Motion passed unanimously

Chairman Michael Brown adjourned the meeting at 7:56 p.m.

APPROVED:

ATTEST:

PRESIDING OFFICER

BOARD OR COMMISSION SECRETARY

STAFF REPORT TO THE PLANNING AND ZONING COMMISSION

MEETING DATE: MAY 23, 2024

AGENDA ITEM NUMBER: INDIVIDUAL CONSIDERATION ITEM III.B.

SUBJECT
ITEMS FOR INDIVIDUAL CONSIDERATION

ORIGINATED BY

SUMMARY

RECOMMENDATION

ATTACHMENTS

STAFF REPORT TO THE PLANNING AND ZONING COMMISSION

MEETING DATE: MAY 23, 2024

AGENDA ITEM NUMBER: INDIVIDUAL CONSIDERATION ITEM III.B.1.

SUBJECT

PZ CASE #24-08 Consider approval for a proposed Conditional Use Permit as required by Section 24.2 (C) of the Unified Development Code for "Battery Energy Storage Systems," a new land use, located at 509 S New Hope Rd, Tract 1EE & A1327 TRS 2B01 & 2B04, Abstract 378, situated in the Cannon E C Survey, and 501 S NEW HOPE RD, Block 1, Lot 1, of the Kim Addition, and City of Kennedale, Tarrant County, Texas

ORIGINATED BY NATHAN GONZALES

SUMMARY

At our last regular meeting, P&Z requested staff confirm with the city attorney concerning procedural matters relating to a Conditional Use Permit for the proposed development from Cypress Creek Renewables given that the current UDC does not include an applicable land use. P&Z also questioned if the UDC needed to be amended prior to making a recommendation. Staff has conferred with the city attorney and confirmed that a Conditional Use Permit is the proper avenue and permit under which the city may consider the proposed new land use by Cypress Creek Renewables. Furthermore, the UDC will not need to be amended to include a land use for energy battery storage systems at this time. Staff is considering including land use definitions for new alternative energy systems and technologies in the upcoming UDC update, however, these will likely still require a Conditional Use Permit so that each case may be considered upon its own merits.

Cypress Creek has provided an updated memo to P&Z as well as the Fire Department addressing concerns raised during the previous meeting. This memo provides a summary of the findings from the incident study (plume study) performed for the Kennedale site. The full incident study has also been included for your review. As an emergency plan will need to be tailored specifically to a Kennedale site, Cypress Creek has also provided a draft emergency plan from the site they reference in Rosenberg, TX.

SUMMARY

RECOMMENDATION

ATTACHMENTS

1.	Memo to Kennedale Planning Board & Fire Marshal	Memo to Kennedale Planning Board & Fire Marshal.pdf
2.	Incident Study	Incident Study.pdf
3.	Brazos Bend 23-20339 E03	Brazos Bend 23-20339 E03.pdf

MEMORANDUM

To: City of Kennedale Planning & Zoning Commission, and City Fire Marshal

From: Jacob Gubbrud, Director of Engineering at Cypress Creek Renewables

Date: May 17, 2024

Re: Summary of Commitments regarding Fort Watt Energy Storage Project

1. Fort Watt storage commissioned a plume study of the proposed facility dated 5/17/24. This study evaluates the release of gases from a battery thermal event to determine severity of potential hazards and risks. It concluded that the radius of risk would minimally extend beyond the project boundaries and would be limited to within 85' of the affected battery container.
2. An Emergency Response Plan (ERP) will be provided to the Kennedale Fire Marshal once construction is reaching completion, all equipment has been procured, and site designs have been finalized. An example ERP will be provided as an attachment to this memo.
3. Fort Watt Storage, in coordination with the equipment manufacturer(s) and Cypress Creek Operations & Maintenance, will provide appropriate training to the Fire Department and all emergency first responders of the City's choosing immediately after the site becomes operational and at an ongoing basis into the future. Any reasonable costs to City emergency services personnel shall be incurred by Fort Watt Storage.
4. Fort Watt Storage will provide a bond and associated contract in the amount of \$200,000 to be placed with the City of Kennedale to be used in the unlikely event of an emergency on site. The bond and contract will be in place by the start of construction and maintained for the project's life until decommissioning. The goal of the bond is to ensure funds are available to the City if they need to act quickly for project-related emergencies.
5. In consideration of Emergency Services personnel staff time working on this project now and into the future, Fort Watt Storage will provide a one-time payment at construction commencement in the amount of \$75,000 to the City of Kennedale Fire Department to compensate public staff for their time and further the Department's mission of public safety.

- What is a plume study?
 - A study to determine the potential impact on the surrounding area if a thermal runaway event were to occur. The study determines the radius at which a risk would exist under various weather conditions in a worst-case scenario.
 - Thermal runaway is an event in which the battery enters an uncontrollable self-heating state
- Inputs
 - UL 9540A Test Results
 - Test where a battery is intentionally put into thermal runaway to see how battery reacts and if the thermal event propagates between batteries.
 - *Technology chosen for this project demonstrated no flame, only smoke, and no propagation between battery modules within a container during this testing.*
 - Test measures off-gas (smoke) composition and volume.
 - Weather Conditions
 - Typical weather conditions for the area based on local weather station data
 - Wind speed of 4.5 mph – typically produces more severe consequences due to less dispersion of gas.
 - Wind speed of 11 mph – typically produces less severe consequences due to greater dispersion of gas.
 - Temperature of 96°F – minimal impact on plume
 - Humidity of 10% - minimal impact on plume
 - Release scenarios
 - Assume worst case release scenario, above and beyond what UL 9540A testing demonstrates.
 - For this plume study, an entire battery container entering thermal runaway (48 modules, 4992 cells) was the scenario evaluated. *This would be 48 times worse than the results of the UL 9540A test indicate is a worst-case scenario as the modules are designed to not propagate.*
- Outputs
 - Thermal impacts

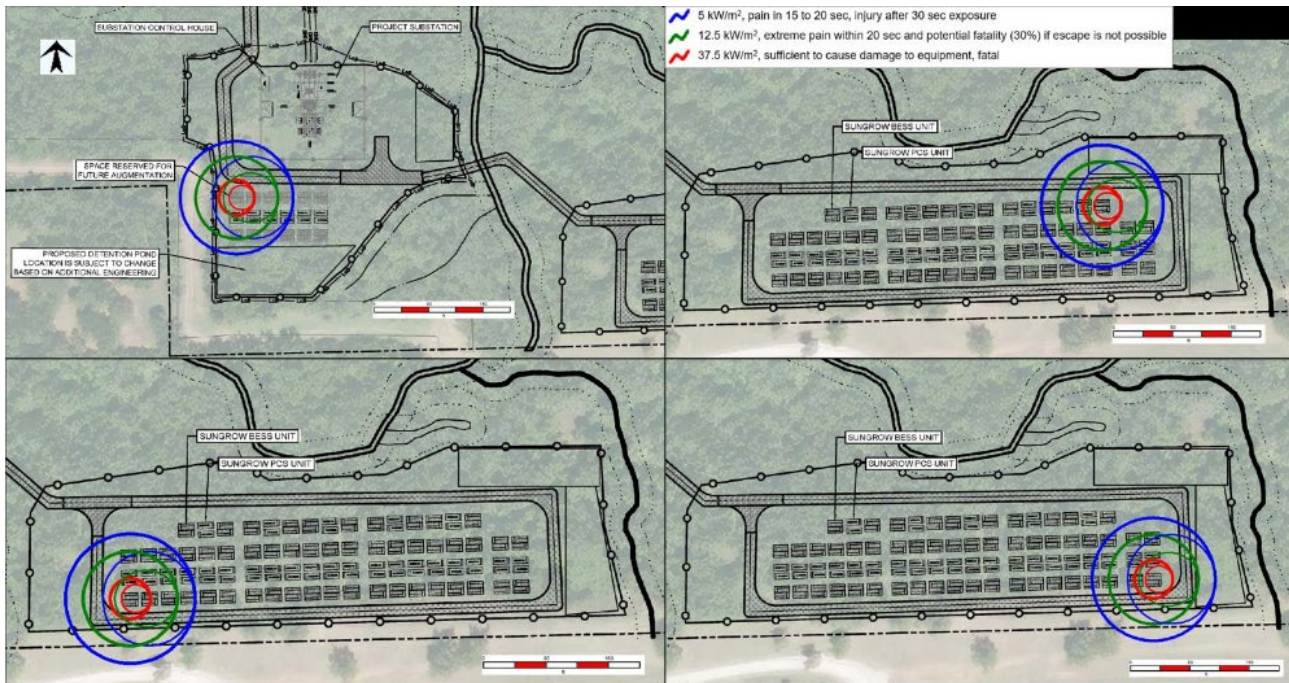


Figure 4-1: Thermal Radiation Hazard Zones (360-degree rotation) for Enclosure Failure – at D5 Weather Condition and 3.3 ft Elevation

- Results indicate that minimal thermal radiation risk would exist outside of the project boundaries
- Toxic Plume impact
 - Plume would come out of the container at approximately 8 feet above grade and immediately start to rise as the plume composition is lighter than air

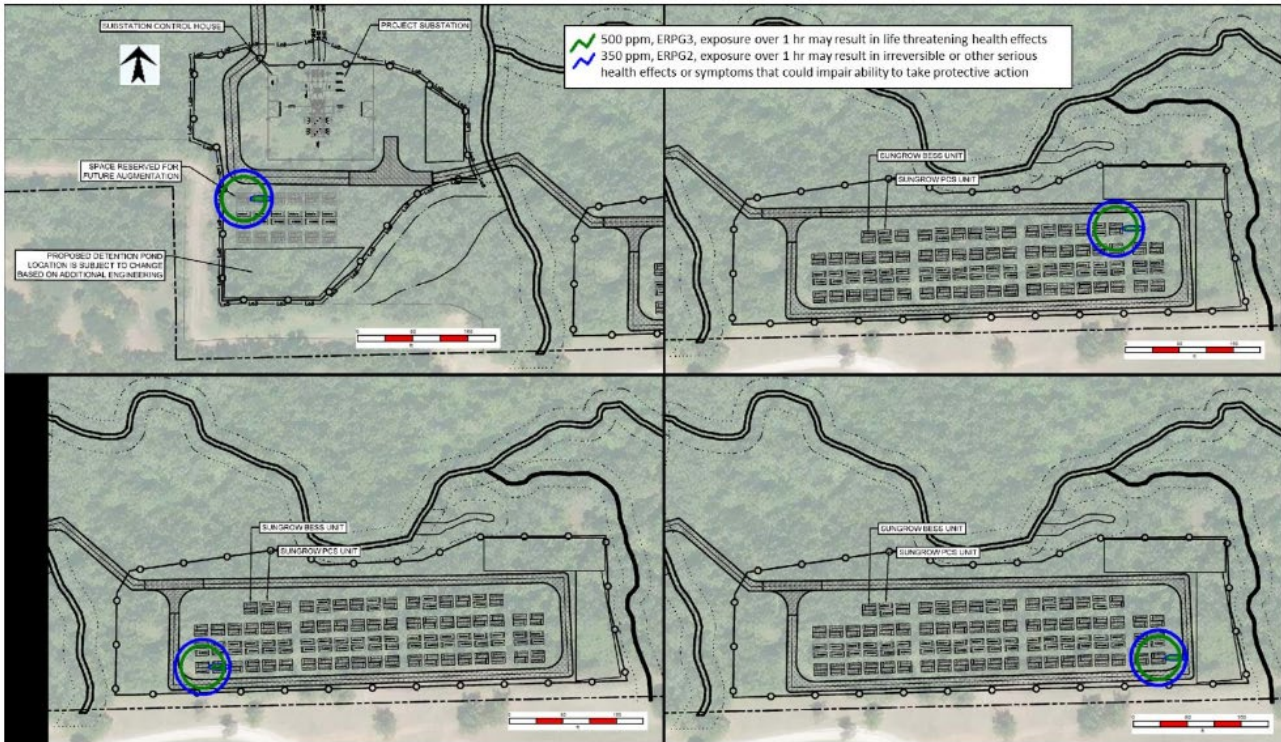


Figure 4-8: CO Toxic Dispersion Hazard Zones (ERPG-3 and ERPG-2) (360-degree rotation) for Enclosure Failure at Height of 19.5 ft (F2 Weather Condition)

- Results indicate the hazardous gases in the plume would be dissipated within 40 feet of the affected container. This indicates that toxic gases would be below hazardous levels outside of the project boundary.
- Conclusion
 - UL 9540A test demonstrates no flame, only smoke during thermal runaway
 - UL 9540A test demonstrates no propagation between modules (only one module would be affected)
 - Plume study evaluated a worst-case scenario where 48 modules enter thermal runaway
 - Plume study demonstrates even in the worst-case scenario modelled, significant thermal or toxic plume hazards are not estimated to reach outside of the project boundary during worst-case weather conditions for the area.



HOLTSVILLE WEST

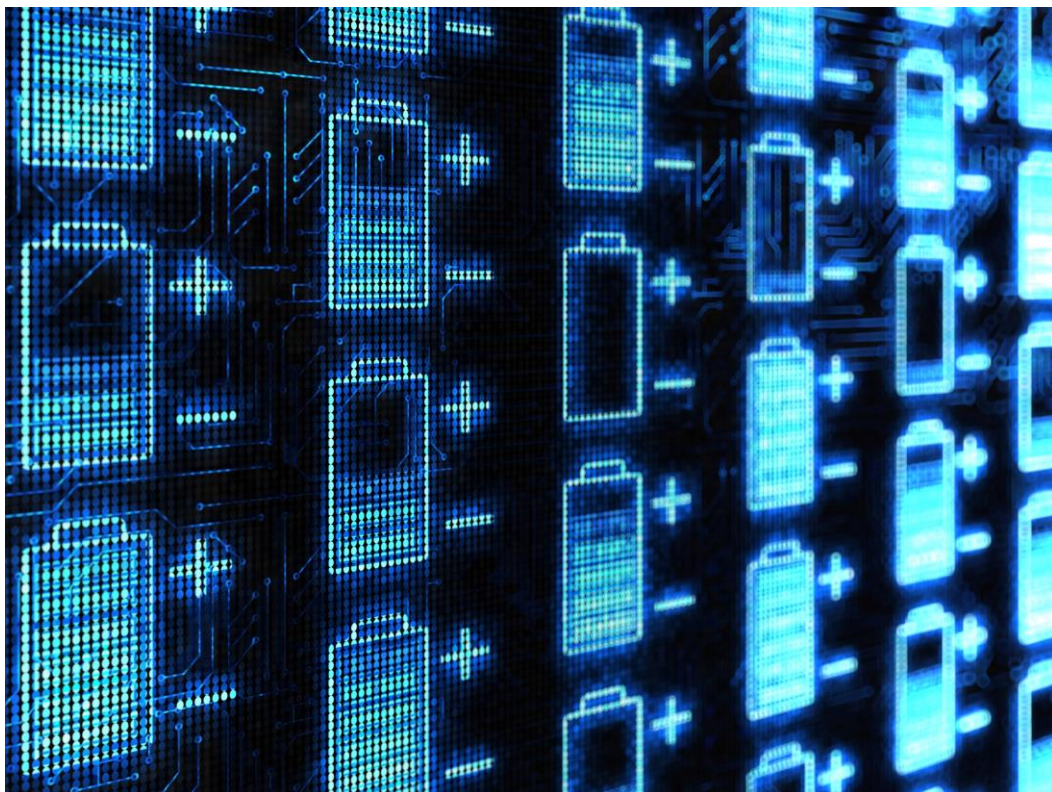
BESS Consequence Study

Cypress Creek Renewables, LLC

Project No.: 10510510, Rev. A

Document No.: 10510510-HOU-R-01

Date: 17 May 2024



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Report title:	BESS Consequence Study	DNV Energy USA Inc.
Customer:	Cypress Creek Renewables, LLC	Energy Systems
	5310 S Alston Ave, Durham, NC 27713	1400 Ravello Dr
Customer contact:	Jacob Gubbrud	Katy, TX 77449
Date of issue:	17 May 2024	Tel: +1 281 396 1000
Project No.:	10510510	
Organization unit:	Energy Storage Engineering	
Report No.:	10510510, Rev. A	
Document No.:	10510510-HOU-R-01	

Objective:

The main objective of the study is to determine the potential flammable and toxic dispersion and thermal radiation hazard zones resulting from the potential consequences of three defined battery failure scenarios at the proposed Holtsville West battery energy storage site.

Prepared by:

Verified by:

Approved by:

Cynthia Spitzenberger
Principal Consultant

Tatiana Norman
Principal Consultant

Mark Kellenberger
Senior Engineer, Energy Storage Safety

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Keywords:

BESS, Fire, LFP, battery, Energy Storage,
Flammable, Toxic, Thermal Radiation, Enclosure,
Consequence

Rev. No.	Date	Reason for issue	Prepared by	Verified by	Approved by
A	17 May 2024	Draft issue	C. Spitzenberger	T. Norman	M. Kellenberger

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Appendix I: Study Basis



1 EXECUTIVE SUMMARY

DNV Energy USA Inc. ("DNV") has been tasked to prepare a report for Cypress Creek Renewables, LLC ("Cypress Creek" or "Customer") analyzing the risk associated with the deployment of a lithium-ion battery energy storage system (BESS) sited in Kennedale, Tarrant County, Texas. The main objective of the study is to determine the potential flammable and toxic dispersion and thermal radiation hazard zones resulting from the potential consequences of three defined battery failure scenarios:

- (1) 1 module (104 cells) failure with duration over 10 minutes;
- (2) 1 rack failure (832 cells) with a duration over 1 hour; and
- (3) 1 enclosure failure (6 racks, 4992) with a duration over 3 hours.

It should be noted that the UL 9540A unit level test report indicated that 5 cells were damaged by thermal runaway within the initiating module, but there was no module-to-module, or rack-to-rack propagation observed during testing.

The hazardous endpoints selected for this study are based on the hazardous endpoints agreed upon in the Study Basis (Appendix I) and are discussed further in Section 3. The findings summarized below result from the consequence analysis (discussed in Section 4):

1. The thermal radiation danger zones from an enclosure failure are:
 - a. 37.5 kW/m² (sufficient to cause damage to equipment, fatal): 26 ft
 - b. 12.5 kW/m² (Extreme pain within 20 s and potentially fatal if escape is not possible): 60 ft
 - c. 5 kW/m² (pain in 15-20 s, injury after 30 s exposure): 83 ft
2. The flammable cloud at the lower flammability limit (LFL) or half-LFL is estimated not to reach the ground level of 3.3 ft, the potential location of people. Note that these results are specific to the dispersion of the flammable cloud with operation of the enclosure exhaust fan.
3. The toxic clouds for hydrogen fluoride (HF), carbon monoxide (CO), benzene, and toluene are estimated not to reach the ground level of 3.3 ft, the potential location of people. Note that these results are specific to the dispersion of the toxic clouds with operation of the enclosure exhaust fan.
4. The nearby neighborhoods are estimated not to be exposed to the evaluated thermal radiation hazards or the flammable/toxic dispersion clouds. The equipment area at the project substation may be exposed to the 5 kW/m² thermal radiation hazard depending on the release location (assumed from the future site development) and wind direction. The security fence, property line, site access road, and project area are estimated to be exposed to 5 kW/m² and 12.5 kW/m² thermal radiation hazards depending on the release location and wind directions. The 37.5 kW/m² thermal radiation hazard zone is estimated to reach the security fence and site access road but is estimated not to reach the property line or the project substation.

2 INTRODUCTION

DNV Energy USA Inc. ("DNV") has been tasked to prepare a report for Cypress Creek Renewables, LLC ("Cypress Creek" or "Customer") analyzing the risk associated with the deployment of a Sungrow PowerTitan2.0 lithium-ion battery energy storage system (BESS) sited in Kennedale, Tarrant County, Texas. This study includes a comprehensive analysis of gas risks from the BESS. The gas risks addressed in this analysis are with respect to varying failure events and their associated plumes. Consequences are evaluated and reported for flammable and toxic gas dispersion and thermal radiation hazard zones. Explosion hazards are excluded from the scope.

The proposed Fort Watt Energy Storage Project is a 200 MW / 400 MWh battery storage facility located on S New Hope Rd, Kennedale, TX. The Project will utilize advanced battery technology and control systems contained in enclosures. The Project will consist of 100 of these enclosures along with associated inverters, transformers, and controls. Electrical cabling delivers the power to medium voltage switchgear and then to the high voltage substation. The Project substation will be located adjacent to the BESS as seen in the Figure below.

Figure 2-1 presents an overview of the proposed site location south of Kennedale in Tarrant County, Texas.

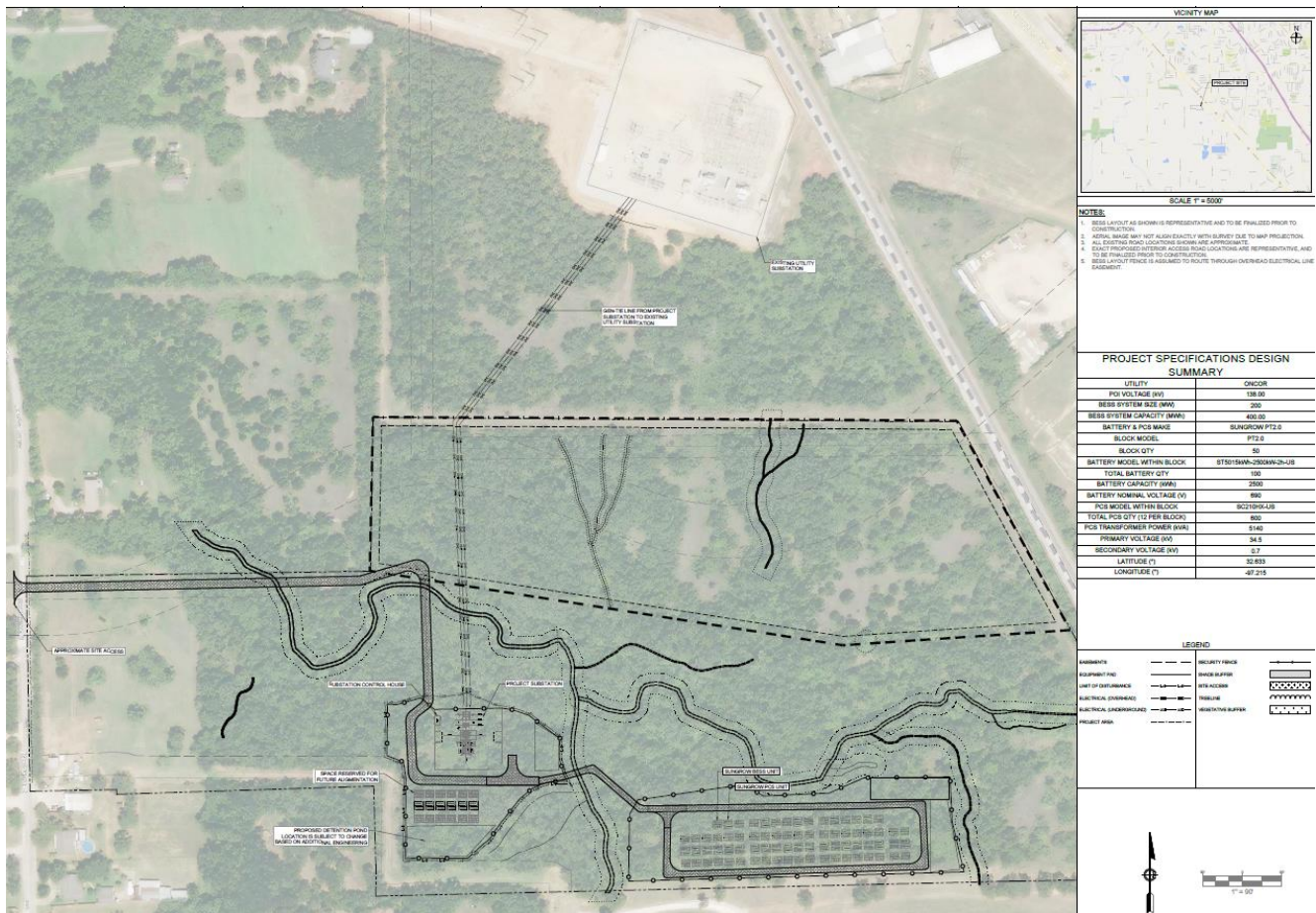


Figure 2-1: Site Location and Layout (I/3/)

The BESS is a lithium iron phosphate (LFP)-based lithium-ion battery enclosed in a container with dimensions of 6.058 m x 2.896 m x 2.438 m (W x H x D) (/1/). There are 104 cells per module and 8 modules (832 cells) per rack. One battery enclosure consists of 6 racks (4,992 cells per enclosure) (/1/).

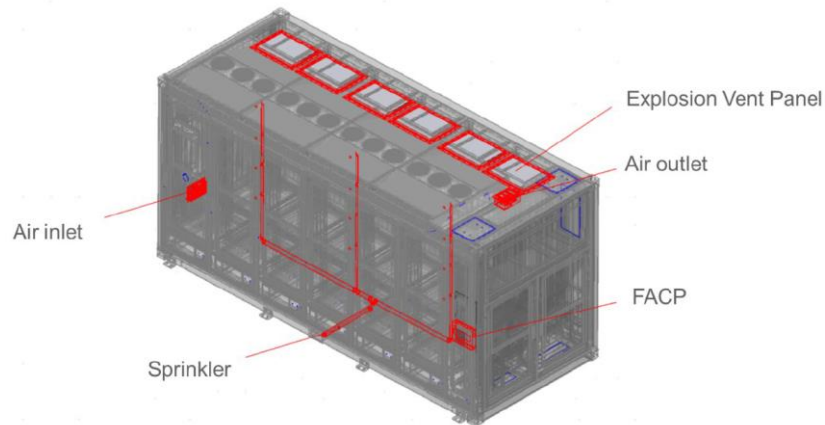


Figure 2-2: BESS System (/2/)

DNV's analysis of safety testing of similar BESS on the market shows that heat, nail penetration, crush, and overcharge could trigger thermal runaway reactions leading to smoke and venting from the battery cells. Flammable and toxic gas release hazards, as well as thermal radiation hazards initiated by thermal runaway reactions due to various reasons within one BESS enclosure are included in this study. The escalation between enclosures or containers is not included in this study. The potential hazard effects to surrounding community are discussed in this study. DNV notes that hazards related to improper firefighting strategies are not covered in this analysis.

3 CASE SELECTION, METHODOLOGY, AND ASSUMPTIONS

3.1 Failure Scenario Cases

A single battery cell fire is assumed to occur due to thermal runaway reaction, with failure induced by abuse conditions, manufacturing defects, or external damage to the cell. A single cell failure, which in the case of a properly deployed and managed system should be a rare event, may result in escalation to the full system should the cell combust because of failure. This escalated failure may then spread through the module, rack or ultimately the whole enclosure. During a fire, toxic materials are quickly discharged from the battery to the surroundings due to the occurrence of a series of exothermic reactions. Toxic and fire hazards were considered during this analysis. Different battery chemistries result in different toxic components modeled. Gases released from burning LFP batteries include: Nitrogen (N₂), Oxygen (O₂), Hydrogen (H₂), Carbon Dioxide (CO₂), Carbon Monoxide (CO), Methane (CH₄), Ethane (C₂H₆), Ethene (C₂H₄), Propane (C₃H₈) and Propene (C₃H₆). The exact composition of the gases can be obtained from the UL 9540A destructive testing report for the cell. UL 9540A test reports which evaluate the off-gas and potential thermal runaway propagation for the cell, module, and unit were provided as input to the evaluation (/4/, /5/, /6/). No external flaming was observed during the tests. The test reports indicated that 5 cells were damaged by thermal runaway within the initiating module, however thermal runaway propagation was not seen between modules (/5/, /6/).

The composition of the off-gas is tabulated in Table 3-1 based on the summary of the UL 9540A cell report (/4/). Based on the test report, the estimated volume of gas from a single cell is 0.176 m³ (/4/).

Table 3-1: Off-gas Composition

Material	Vol%
Carbon monoxide (CO)	12.642
Carbon dioxide (CO ₂)	26.413
Hydrogen (H ₂)	46.491
Methane (CH ₄)	7.016
Acetylene (C ₂ H ₂)	0.158
Ethylene (C ₂ H ₄)	3.111
Ethane (C ₂ H ₆)	1.174
Propylene (C ₃ H ₆)	0.422
Propane (C ₃ H ₈)	0.154
Butane, C ₄ total	0.657
Pentane, C ₅ total	0.200
Hexane, C ₆ total	1.495
Benzene (C ₆ H ₆)	0.058
Toluene (C ₇ H ₈)	0.008
Total	100.0

A range of release scenarios were evaluated:

- 1 module (104 cells) failure with duration over 10 minutes
- 1 rack failure (8 modules = 832 cells) with a duration over 1 hour
- 1 enclosure failure (6 racks = 4,992) with a duration over 3 hours

Although the UL 9540A test results did not give indication of thermal propagation between modules or racks, the above scenarios are proposed to evaluate conservative scenarios. Note that the assumed durations are also a conservative

estimation. Propagation of the module failures, if possible, would take time to spread through the modules and racks within the enclosure. This study has not evaluated the time for potential propagation between cells and modules for thermal runaway.

For these scenarios, it is assumed that the batteries are at 100% state of charge.

Hydrogen Fluoride (HF) was not measured in the cell, module or unit level off-gas composition (/4/, /5/, /6/). However, to ensure that HF is included in the evaluation to evaluate the potential risks, 1,000 ppm (0.001%) is included in the off-gas composition based on DNV experience of battery failure tests (/12/). Carbon monoxide, benzene, and toluene were toxic components measured and recorded within the off-gas composition and therefore used within the toxic gas evaluation.

All three of the UL 9540A cell, module, and unit level tests (/4/, /5/, /6/) did not report external flaming during the test evaluations. For the thermal radiation evaluation, an external flame is assumed possible and present. To model the worst case, the size of the enclosure length (6.058 m, 19.9 ft) is applied to model the fire. Note that the Phast modelling software utilized in this study is a free field model and does not account for the geometry of obstacles or potential shielding of obstacles for thermal radiation. The model will assume that the walls of the container have failed and there are external flames to the enclosure. Therefore, the resulting radiation zones will be a conservative estimation.

No explosion modeling is considered within the work scope.

The container is equipped with flammable gas detector and exhaust vent. The flammable gas detector is calibrated to 10% LEL (/2/). If the flammable gas detector is triggered, the ventilation system is activated.

The rated flow rate of the exhaust fan is 441 ft³/min; however when considering flow rate attenuation in the container the exhaust fan operates at a flow rate of 238 ft³/min (/7/). The size of grate for air change is 347 mm x 248 mm x 88 mm, equivalent to surface area of 0.086 m² (/7/).

The release elevation for the plume modeling is assumed to be at the height of the exhaust indicated outlet on top of the enclosure (/7/). The exhaust fan is at the top of the enclosure at a height of about 2.896 m (9.5 ft). The discharge is assumed at this height above ground level. Releases are modeled as vertical as the off-gassing valve is mounted on the top of the battery enclosure.

3.2 Meteorological Data

Data on the wind speed and atmospheric stability are combined to form a set of representative weather categories. The atmospheric stability and wind speed impact the consequence modeling as the gas cloud dispersion will be affected by the atmospheric conditions. The following representative wind speed and stability class are assumed:

- F2 – atmospheric stability F and wind speed of 2 m/s (4.5 mph) – Typically produces more severe dispersion consequences due to stable wind conditions which results in less turbulence and dilution of the vapor cloud.
- D5 – atmospheric stability D and wind speed of 5 m/s (11 mph) – Represents neutral atmospheric conditions, either during day or night. Typically produces less severe dispersion consequence zones as the greater wind speed promotes more mixing.

The average high annual temperature, 96°F, for Kennedale, TX is applied to the modeling (/8/) to mimic the worst case. The same is assumed for the surface and ground temperatures.

The extreme low humidity of 10%, is applied to the modeling to mimic the worst case. The surface roughness length of 30 mm (open flat terrain; grass, few isolated objects) is applied to represent the area.

3.3 Modeling Endpoints

The fire and dispersion hazards are modeled for defined thresholds indicative of potential hazard impacts.

The fire thermal radiation consequence results are provided at downwind distances from the release source at the following radiation levels shown in Table 3-2 in accordance with the Center for Chemical Process Safety (CCPS) and DNV's general practices (/9/ and /10/).

Table 3-2: Thermal Radiation Level Endpoints

Radiation Intensity (kW/m ²)	Effect
37.5	Sufficient to cause damage to process equipment, 100% lethality
12.5	Extreme pain within 20 sec and fatality (30% lethality) could occur if escape is not possible.
5	Pain in 15 to 20 sec and injury after a 30-sec exposure.

Flammable dispersion results are reported at downwind distances from the release source at the lower flammability level (LFL) concentration and half-LFL concentration. The LFL concentration is defined based on the gas composition and a weighted average based on the gas constituents that are considered flammable.

For toxic chemicals, Emergency Response Planning Guideline (ERPG-3 and ERPG-2) values are adopted as the modeling endpoints. ERPGs are developed by the Emergency Response Planning committee of the American Industrial Hygiene Association (AIHA). ERPG-3 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects. ERPG-2 is the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action.

Table 3-3 lists the toxic dispersion endpoints adopted for application within the modeling (/11/).

Table 3-3: Toxic Materials Threshold Values as Modeling Endpoints

Materials	ERPG-3 (ppm)	ERPG-2 (ppm)
Hydrogen Fluoride (HF)	50	20
Carbon Monoxide (CO)	500	350
Benzene (C ₆ H ₆)	1000	150
Toluene (C ₇ H ₈)	1000	300

3.4 Software / Tools

The consequence modeling is conducted in Phast v9.0. Phast is a comprehensive hazard analysis tool applicable to all stages of design and operation across a wide range of process industries. It is widely used as a compliance, facility siting or an operational tool. Phast examines the progress of a potential incident from the initial gas release to far-field dispersion including modeling of pool spreading and evaporation, as well as flammable and toxic effects. Phast is a free-field model, meaning it does not take into account any effects on a release from obstacles or elevation changes in the path of the release. The results from the analysis can be displayed in tabular and graphical form, so the extent of the impact can be seen, and the effect of the release on the population and environment assessed.

Phast is designed to comply with the regulatory requirements of many countries. For example, specific modules have been included to ensure compliance with the Dutch Yellow Book, US EPA, and UK HSE regulations. Phast contains models tailored for hazard analysis of offshore and onshore industrial installations.

4 RESULTS AND DISCUSSION

4.1 Summary of Hazard Zone Results

Table 4-1 summarizes the results of the Phast analysis from the evaluated scenarios with impact assessed at 3.3 ft from the ground. This height is selected as it is considered the minimum height where people may be present and exposed. Other heights and distances might be of interest when considering neighboring buildings on site. The buoyant toxic and flammable vapor clouds from the exhaust fan are estimated not to reach the ground level of 3.3 ft and thus there is no dispersion hazard estimated at 3.3 ft. Note that these results are specific to the dispersion with operation of the enclosure exhaust fan.

Details regarding each system and hazard are provided in Section 3.3. This should be reviewed for a fuller understanding of the results under a variety of meteorological conditions, heights, and further granularity of gases.

Table 4-1: Summary of Hazard Distance (ft) Results at 3.3 ft Elevation

Hazard	Hazard Details	1 Enclosure Failure		1 Rack Failure		1 Module Failure	
		F2	D5	F2	D5	F2	D5
Thermal	37.5 kW/m ²	22	26	Not modeled		Not modeled	
	12.5 kW/m ²	52	60				
	5 kW/m ²	77	83				
LFL	LFL	-	-	-	-	-	-
	0.5 LFL	-	-	-	-	-	-
Toxicity HF	ERPG-3 (50 ppm)	-	-	-	-	-	-
	ERPG-2 (20 ppm)	-	-	-	-	-	-
Toxicity CO	ERPG-3 (500 ppm)	-	-	-	-	-	-
	ERPG-2 (350 ppm)	-	-	-	-	-	-
Toxicity Benzene	ERPG-3 (1000 ppm)	-	-	-	-	-	-
	ERPG-2 (150 ppm)	-	-	-	-	-	-
Toxicity Toluene	ERPG-3 (1000 ppm)	-	-	-	-	-	-
	ERPG-2 (300 ppm)	-	-	-	-	-	-

Note: "-" indicates the hazard endpoint of interest was not recorded at the evaluated elevation.

4.2 Detailed Modeling Results

The summary of the impact distances is discussed and presented in the following subsections. For each scenario the downwind distances depending on the wind speed/stability are presented. All results are reported at a height of 3.3 ft in accordance with the Study Basis (Appendix I). This height is selected as it is considered the minimum height where people may be present and exposed. Other heights and distances might be of interest when considering neighboring buildings on site.

Cypress Creek should inform their local emergency responders of the potential hazards associated with battery fires so that they address the fire with appropriate firefighting measures and PPE.

4.2.1 Thermal Radiation Hazards

The following results for thermal radiation are based on a jet/diffusive fire originating from the BESS enclosure. The enclosure is assumed to burn as a fire at the ground level and thermal radiation hazard is reported at 3.3 ft above ground level (the potential location of people). Table 4-2 shows the distance downwind in feet (ft) from the release location at which the thermal radiation levels would be felt at 3.3 ft ground height. Only the enclosure failure scenario is evaluated as it is the worst case.

Note that Phast modeling is free field and the results are conservative given there would be some shielding expected from the originating enclosure walls till they fail.

Table 4-2: Thermal Radiation Levels Downwind Distances (ft) at 3.3 ft Elevation

Failure Scenario	Weather	Downwind Distance (ft) to 5 kW/m ² (pain in 15-20s, injury after 30s exposure) ¹	Downwind Distance (ft) to 12.5 kW/m ² (extreme pain within 20s and potential fatality if escape not possible) ¹	Downwind Distance (ft) to 37.5 kW/m ² (sufficient to cause damage to equipment, fatal) ¹
1 Enclosure Failure	F2	77	52	22
	D5	83	60	26

1. required by personnel without shielding but with appropriate clothing. Appropriate clothing consists of hard hat, long-sleeved shirts with cuffs buttoned, work gloves, long-legged pants and work shoes. Appropriate clothing minimizes direct skin exposure to thermal radiation (1/13).

Figure 4-1 presents the fire thermal radiation hazard zones for one enclosure failure at D5 weather condition for four different BESS locations. Note that the figures present the 360-degree rotation of the potential hazard zone displayed. The thermal radiation results are conservative as no shielding from the container is considered in the modeling and the fire is considered in open air. The nearby neighborhoods are estimated not to be exposed to the thermal radiation hazards from the enclosure failure as shown in Figure 4-1. The equipment area at the Project substation may be exposed to the 5 kW/m² thermal radiation hazard depending on the release location (assumed from the future site development) and wind direction. The security fence, property line, site access road, and Project area are estimated to be exposed to 5 kW/m² and 12.5 kW/m² thermal radiation hazards depending on the release location and wind directions. The 37.5 kW/m² thermal radiation hazard zone is estimated to reach the security fence and site access road, but not to reach the property line or the project substation.

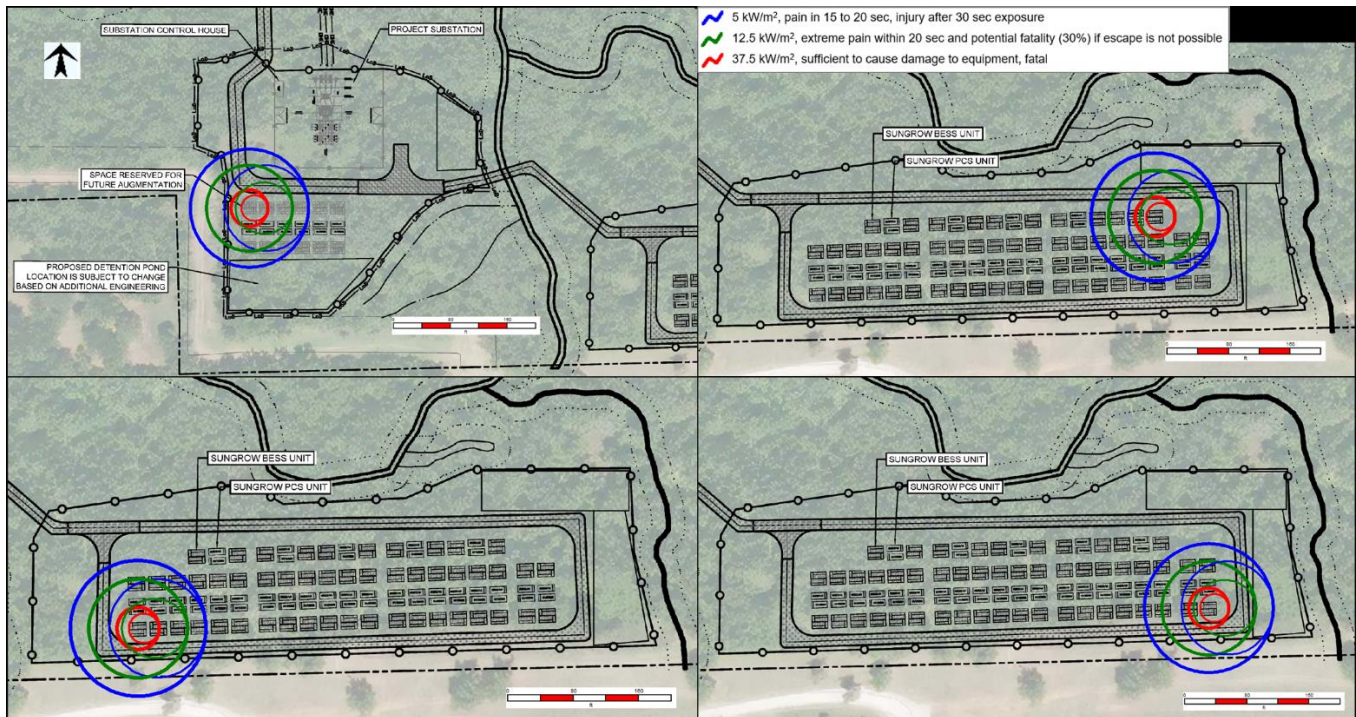


Figure 4-1: Thermal Radiation Hazard Zones (360-degree rotation) for Enclosure Failure – at D5 Weather Condition and 3.3 ft Elevation

4.2.2 Flammable Dispersion Results

For the lower flammability level endpoints, the maximum downwind distance at receptor height of 3.3 ft was evaluated given the flammable gas content. The following results for lower flammability levels (LFL) are based on a release occurring from the exhaust fan at the top of the enclosure (2.896 m, 9.5 ft). The receptor height of people is assumed at 3.3 ft ground level.

Figure 4-2 to Figure 4-4 show the flammable vapor cloud side views for the enclosure failure, rack failure and module failure scenarios, respectively. As the releases are assumed to be released at the height of 2.896 m (9.5 ft), the buoyant flammable vapor clouds are estimated not to reach the ground level of 3.3 ft. The maximum half-LFL flammable dispersion downwind distance of the scenarios is 13.4 ft at a height of 10.7 ft. Note that these results are specific to the dispersion considering operation of the enclosure exhaust fan.

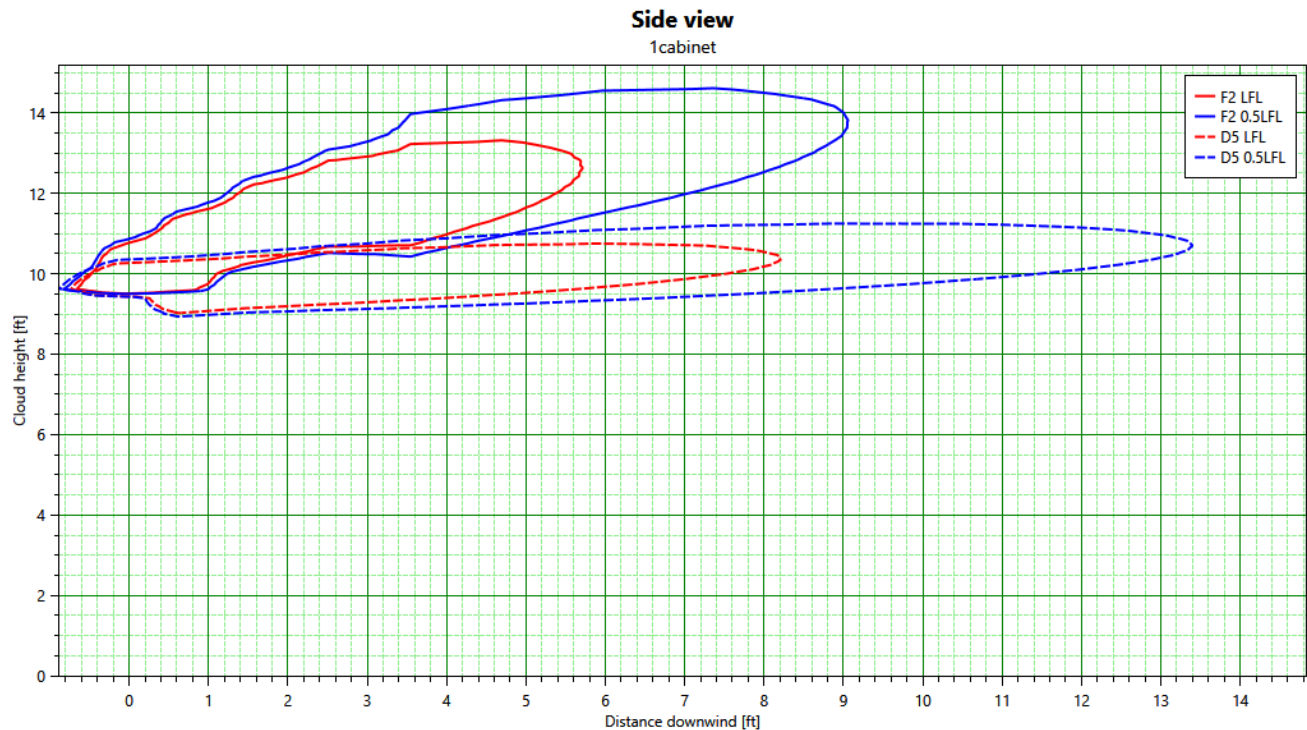


Figure 4-2: Flammable Dispersion Side View, Enclosure Failure

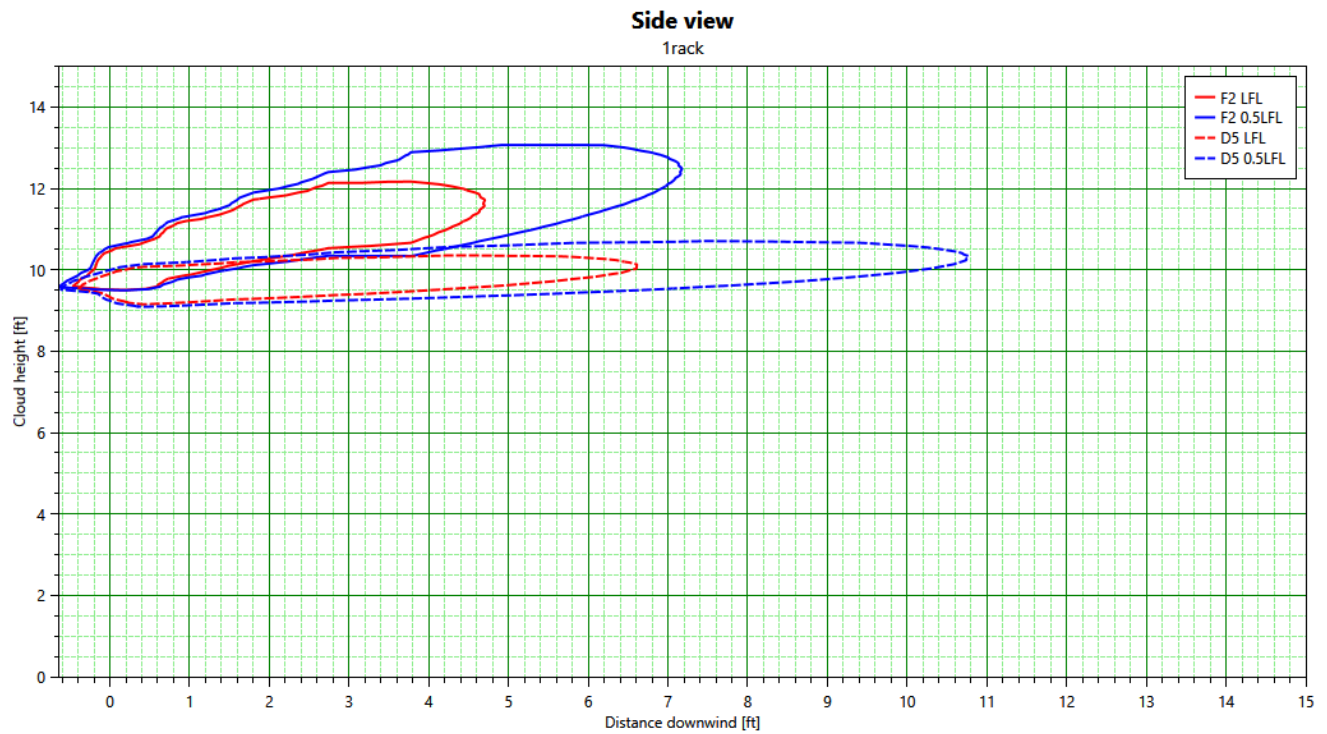


Figure 4-3: Flammable Dispersion Side View, Rack Failure

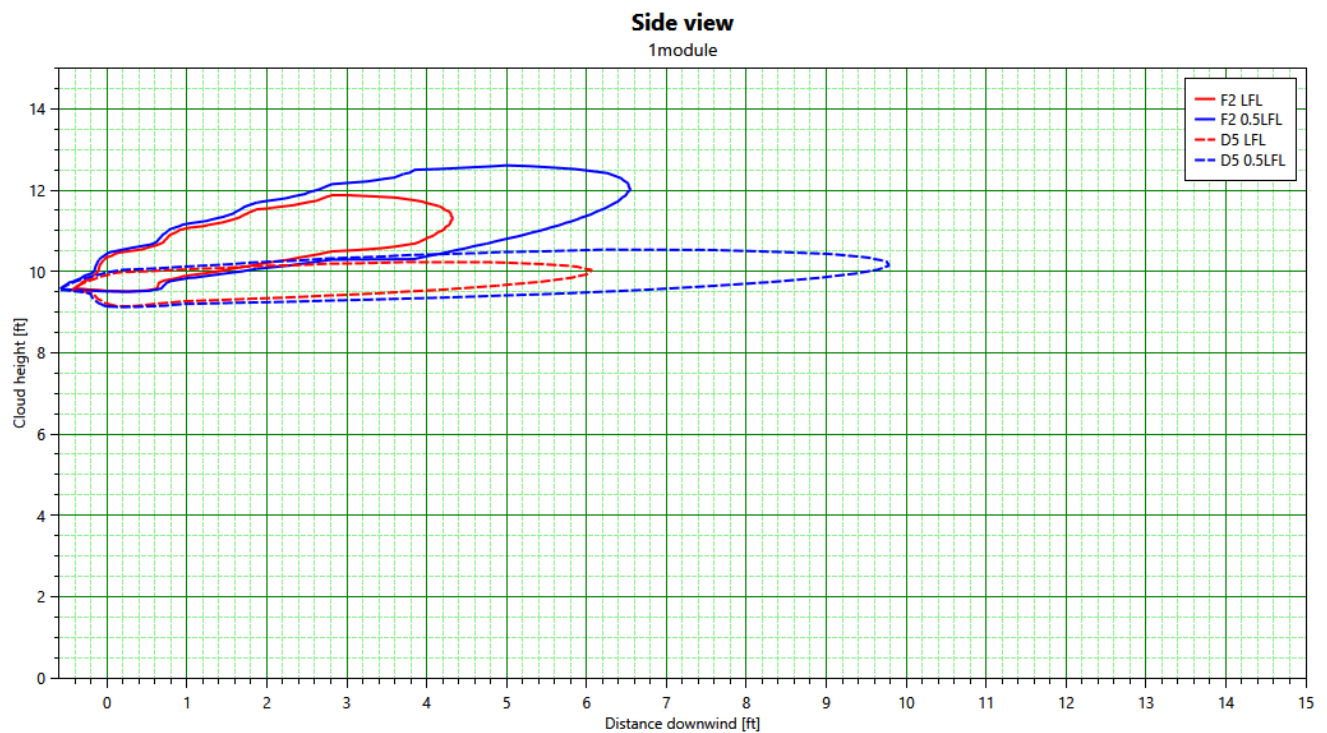


Figure 4-4: Flammable Dispersion Side View, Module Failure

4.2.3 Toxic Dispersion Results

For the toxic gas endpoints, the maximum downwind distance at receptor height of 3.3 ft is reported. The following results for toxic gas endpoints are based on a release occurring from the exhaust fan at the top of the enclosure (2.896 m, 9.5 ft). The receptor height of people is assumed to be at 3.3 ft ground level.

This section shows the toxic vapor cloud side views for the enclosure failure, rack failure and module failure scenarios, respectively. As the releases are assumed to release at the height of 2.896 m (9.5 ft), the buoyant toxic vapor clouds are estimated not to reach the ground level of 3.3 ft. Note that these results are specific to the dispersion considering operation of the enclosure exhaust fan.

4.2.3.1 CO Toxic Hazards

Figure 4-5 to Figure 4-7 show the side views of gas dispersion of the toxic carbon monoxide (CO) endpoints for the enclosure, rack and module failure scenarios, respectively. As the releases are assumed to exit the container via the exhaust fan at the height of 2.896 m (9.5 ft), the buoyant toxic vapor clouds are estimated not to reach the ground level of 3.3 ft.

The maximum CO ERPG-2 dispersion downwind distance of the scenarios is 40.7 ft at a height of 19.5 ft. Note that these results are specific to the dispersion considering operation of the enclosure exhaust fan.

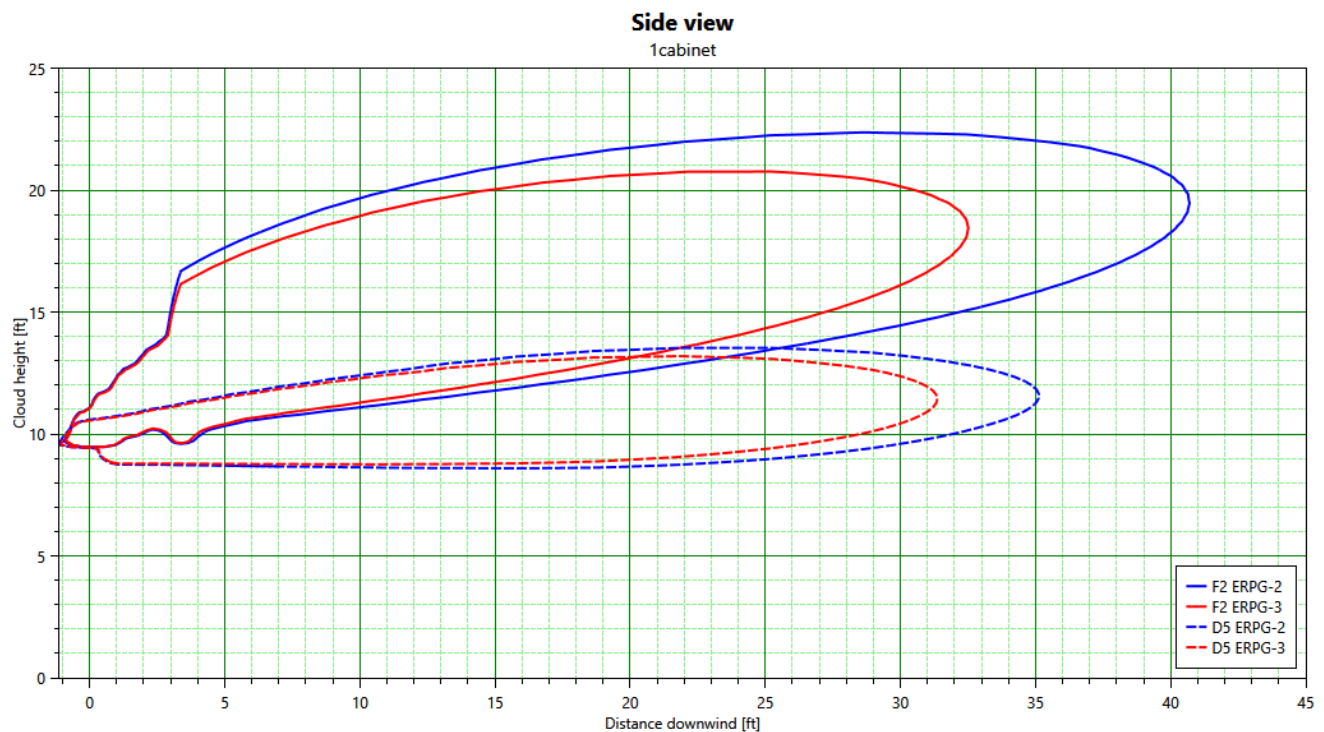


Figure 4-5: Toxic Dispersion Side Views of CO, Enclosure Failure

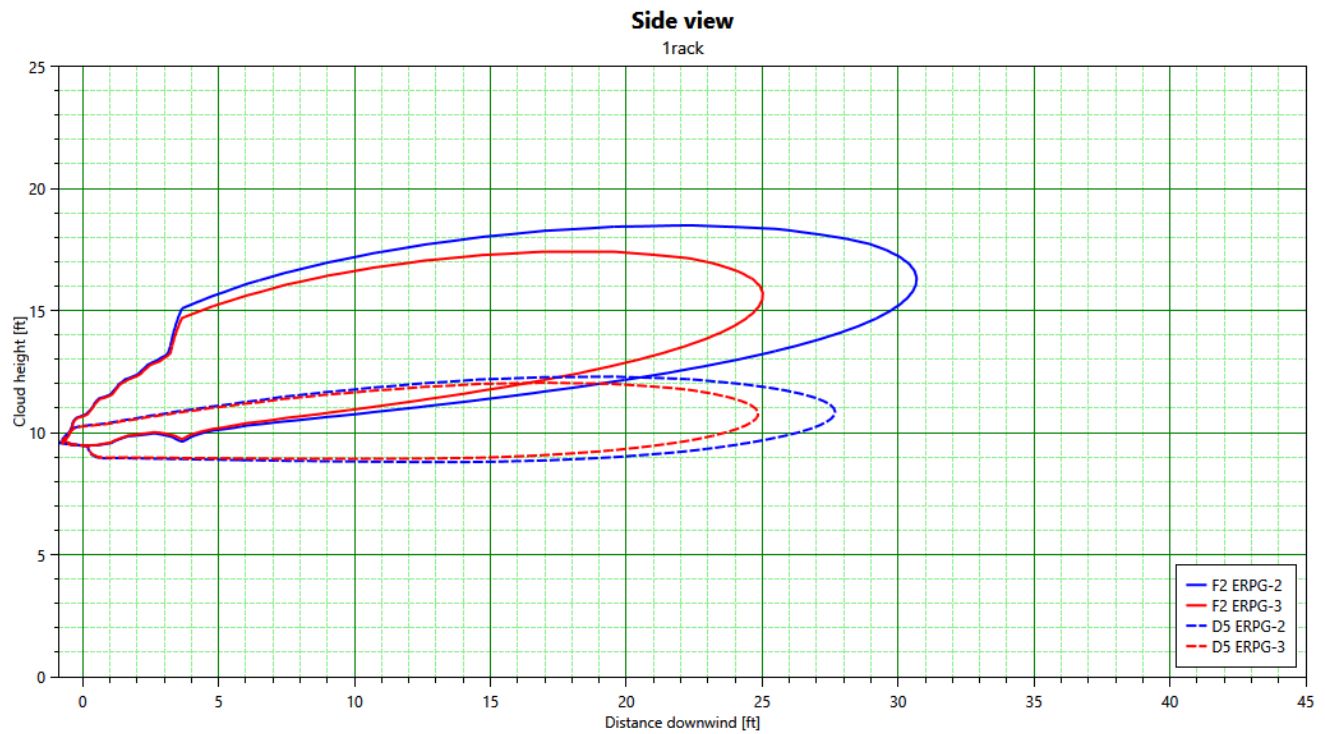


Figure 4-6: Toxic Dispersion Side Views of CO, Rack Failure

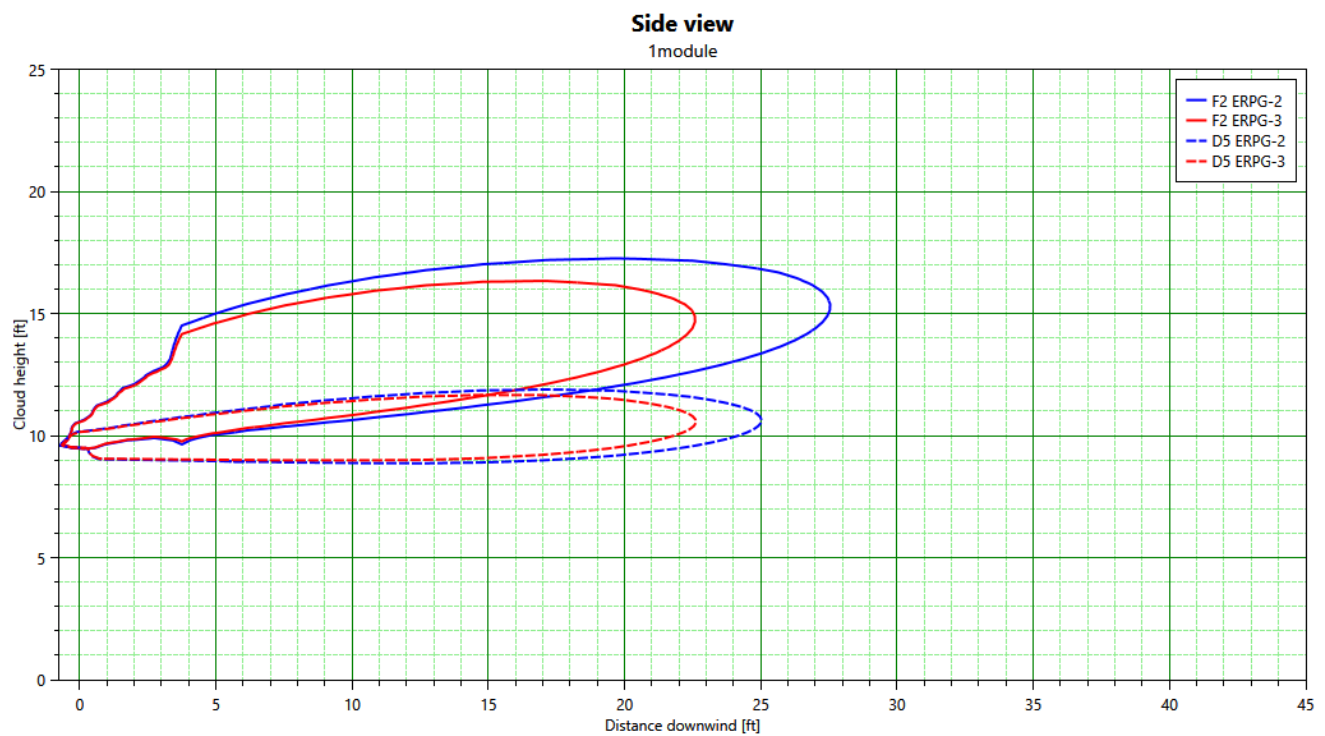


Figure 4-7: Toxic Dispersion Side Views of CO, Module Failure

As seen from the CO toxic dispersion side views (Figure 4-5 to Figure 4-7), the buoyant toxic vapor clouds are estimated not to reach the ground level of 3.3 ft as the releases are assumed to exit the container via the exhaust fan at the height of 2.90 m (9.5 ft).

To display the dispersion extents of the CO toxic hazard zones, the results are presented at a higher elevation than the 3.3 ft. Figure 4-8 presents the CO toxic dispersion hazard zones for one enclosure failure at the F2 weather condition for four locations of the BESS enclosure at a height of 19.5 ft. Note that the figures present the 360-degree rotation of the potential hazard zone displayed.

The nearby neighborhoods and the Project substation are estimated not to be exposed to the CO toxic hazards from the enclosure failure as shown in Figure 4-8. The security fence, site access road and project area are estimated to be exposed to CO 500 ppm and 350 ppm toxic cloud hazards **at 19.5 ft** depending on the release location and wind directions. At the ground level, none of the objects are estimated to be exposed to the CO toxic hazards.

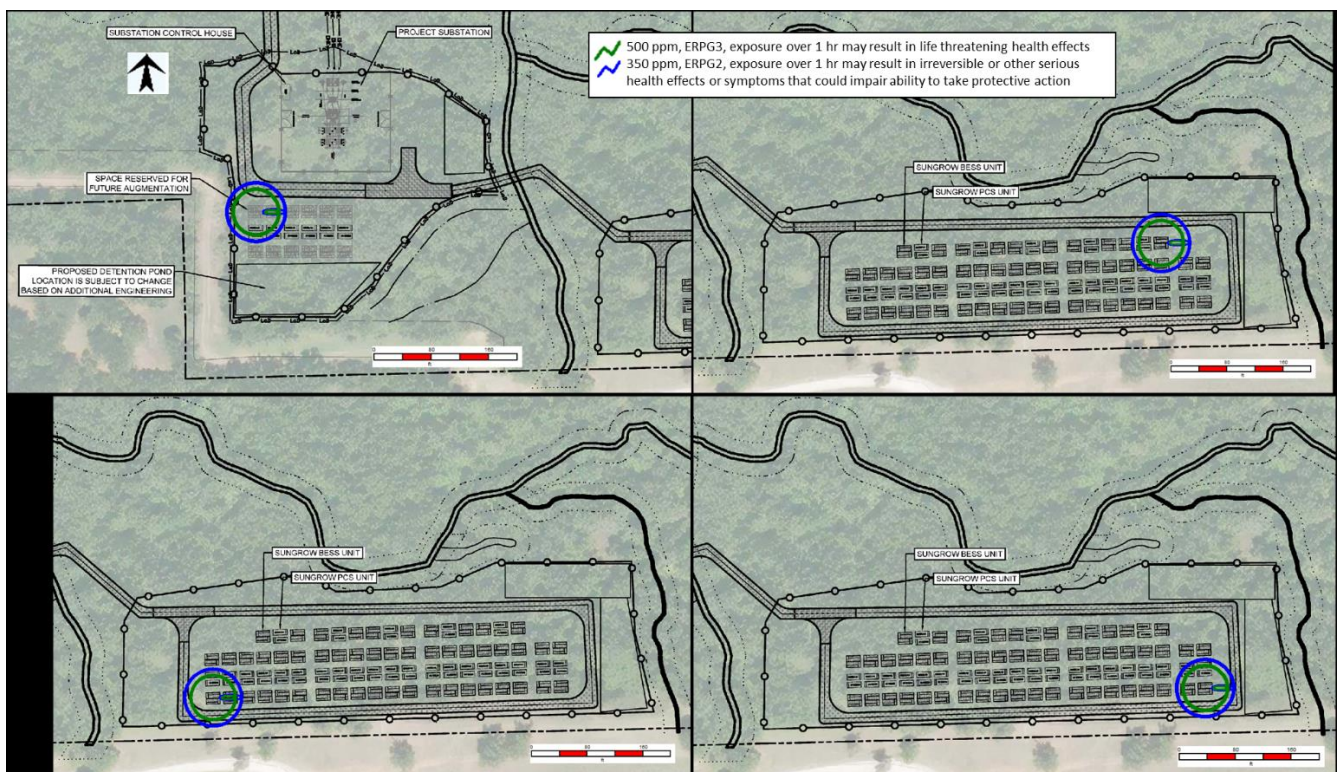


Figure 4-8: CO Toxic Dispersion Hazard Zones (ERPG-3 and ERPG-2) (360-degree rotation) for Enclosure Failure at Height of 19.5 ft (F2 Weather Condition)

4.2.3.2 Benzene Toxic Hazards

Figure 4-9 to Figure 4-11 show the side views of gas dispersion of the toxic benzene endpoints for the enclosure, rack and module failure scenarios, respectively. As the releases are assumed to exit the container via the exhaust fan at the height of 2.90 m (9.5 ft), the buoyant toxic vapor clouds are estimated not to reach the ground level of 3.3 ft.

Only the benzene ERPG-2 concentration (150 ppm) results from the release. The maximum benzene ERPG-2 dispersion downwind distance of the scenarios is 2.1 ft **at a height of 9.8 ft**. Note that these results are specific to the dispersion considering operation of the enclosure exhaust fan.

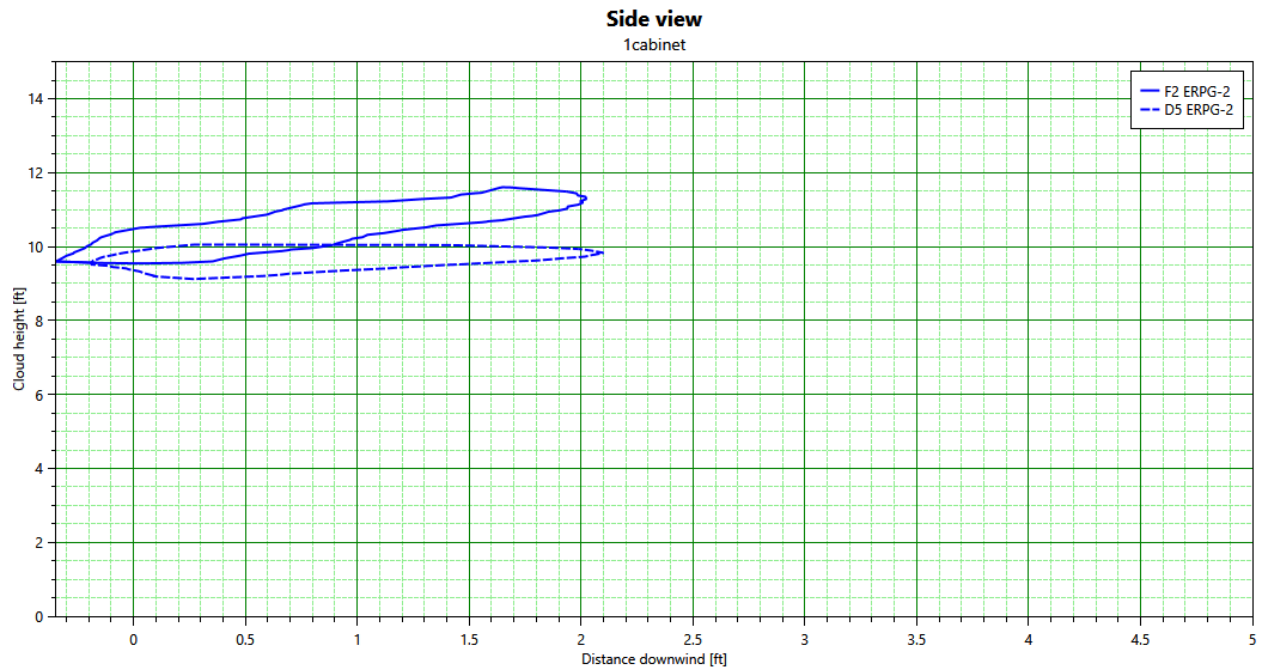


Figure 4-9: Toxic Dispersion Side Views of Benzene, Enclosure Failure

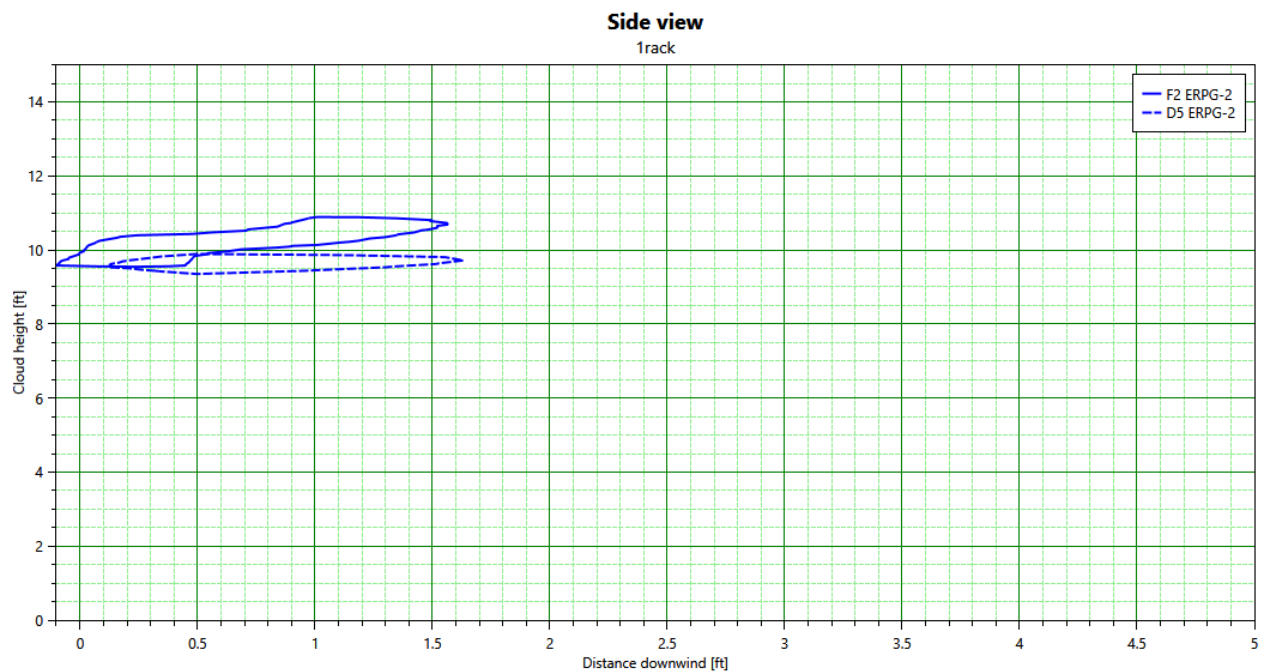


Figure 4-10: Toxic Dispersion Side Views of Benzene, Rack Failure

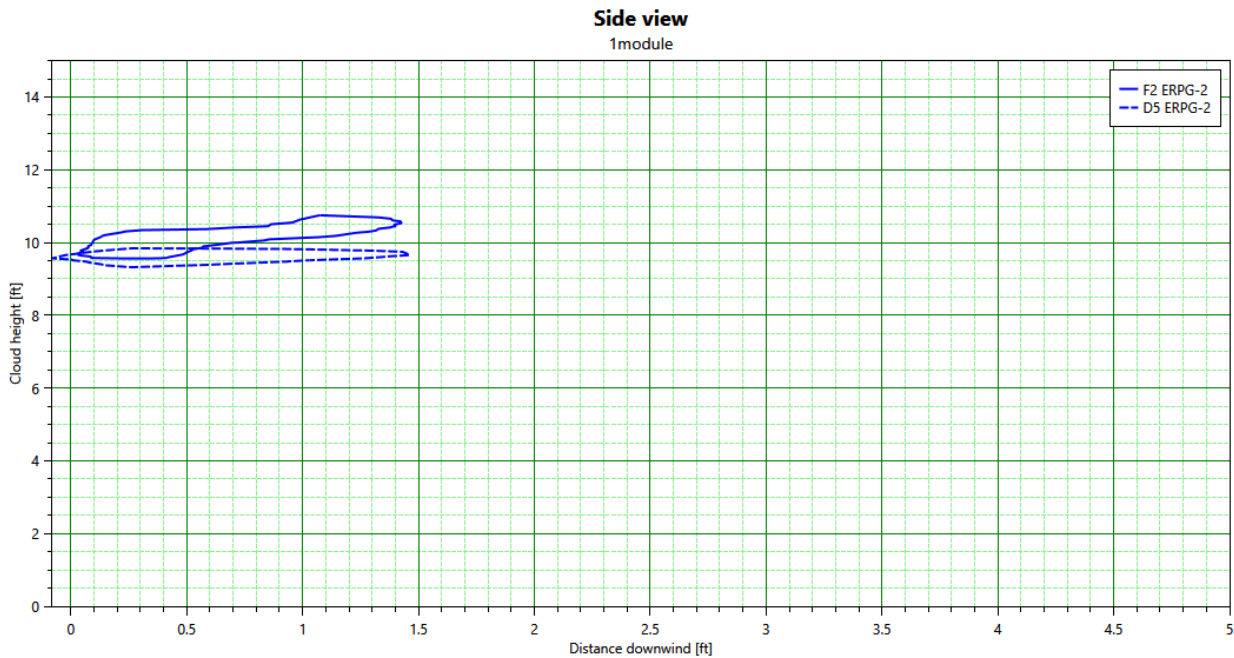


Figure 4-11: Toxic Dispersion Side Views of Benzene, Module Failure

As seen from the benzene toxic dispersion side views (Figure 4-9 to Figure 4-11), the buoyant toxic vapor clouds are estimated not to reach the ground level of 3.3 ft as the releases are assumed to exit the container via the exhaust fan at the height of 2.896 m (9.5 ft).

To display the dispersion extents of the benzene toxic hazard zones, the results are presented at a higher elevation than the 3.3 ft. Figure 4-12 presents the benzene toxic dispersion hazard zones for one enclosure failure at the D5 weather condition for the BESS enclosure at a height of 9.8 ft. Note that the figure presents the 360-degree rotation of the potential hazard zone displayed.

The nearby neighborhoods and the project substation are estimated not to be exposed to the benzene toxic hazards from the enclosure failure as shown in Figure 4-12. The benzene dispersion does not extend to the security fence or site access road **at 9.8 ft** depending on the release location and wind directions. At the ground level, none of the objects are estimated to be exposed to the benzene toxic hazards.

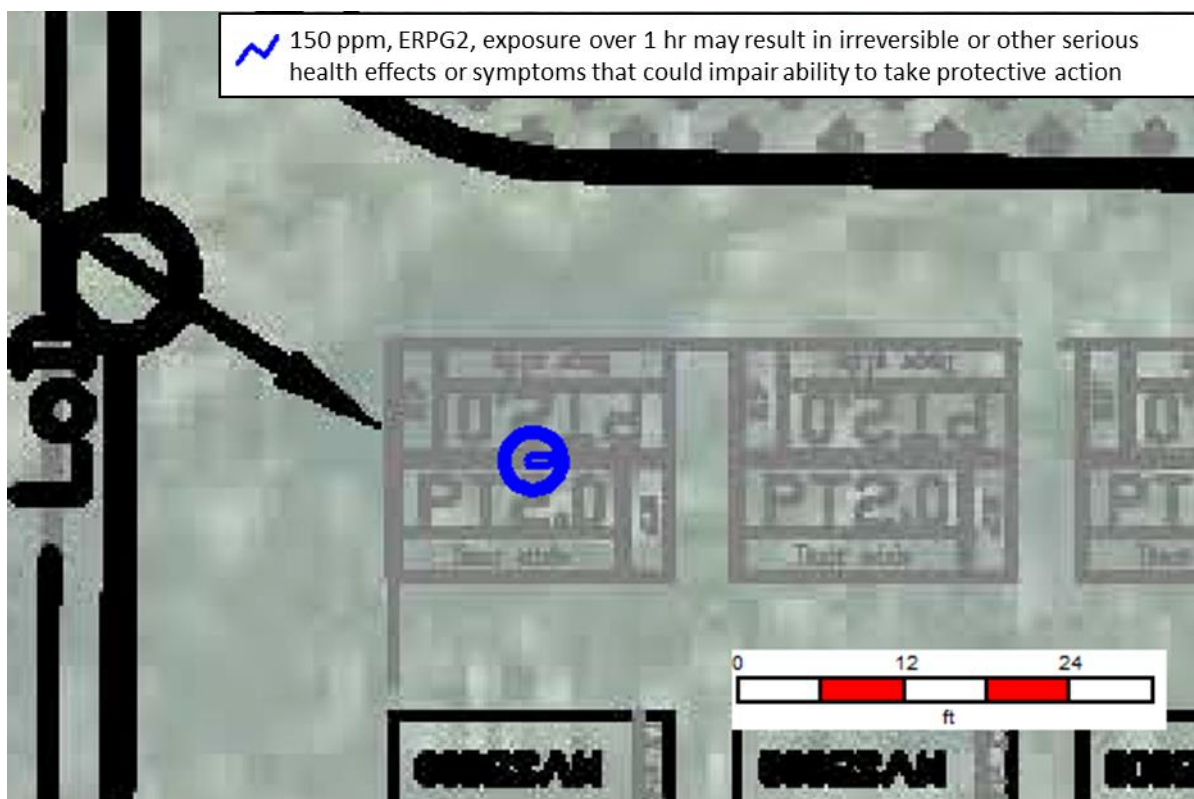


Figure 4-12: Benzene Toxic Dispersion Hazard Zones (ERPG-3 and ERPG-2) (360-degree rotation) for Enclosure Failure at Height of 9.8 ft (D5 Weather Condition)

4.2.3.3 HF Toxic Hazards

The hazards from the HF toxic dispersion are negligible due to their minimal amounts in the off-gas composition. No ERPG-2 or ERPG-3 dispersion plume for HF is estimated to be observed for the scenarios **even at higher elevation**.

4.2.3.4 Toluene Toxic Hazards

The hazards from the toluene toxic dispersion are negligible due to their minimal amounts in the off-gas composition. No ERPG-2 or ERPG-3 dispersion plume for toluene is estimated to be observed for the scenarios **even at higher elevation**.

4.3 Uncertainty

All quantitative studies are subject to uncertainty. The quality and accuracy of the study is dependent on the knowledge, available calculation models, data quality, and degrees of details. It is important to be aware that this study is conducted with the data provided by clients, data generated from internal DNV testing and several assumptions. Consequently, alteration of these assumptions and data may affect the results of the assessment.

A simplified free-field dispersion and radiation model is applied in the consequence analysis, and thus introduces conservatism and uncertainties in the hazard zone estimation. Therefore, any obstacles around the battery containers may lead to the decrease of hazard zone.

The exact smoke composition from a BESS enclosure fire is unknown as the toxic gases are not measured in the UL 9540A test.

In the current study, one enclosure failure is considered as the worst-case scenario. However, it does not mean that multiple enclosure failures would not happen. Certain circumstances with low likelihood, such as external impact (e.g., vehicle collision) to more than one enclosure or extreme weather condition (e.g., wildfire), may lead to multiple enclosures failing, resulting in the increase of hazard zone.

5 REFERENCE

- /1/ Plume Study RFI.xlsx". Email from Jacob Gubbrud "RE: Fort Watt Plume Study" April 8, 2024.
- /2/ SUNGROW, "FSS Design, PowerTitan2.0(US)", v5
- /3/ Cypress Creek Renewables. "BESS Layout". Fort Watt Storage, LLC. Tarrant County, TX. Drawing No. E-101. Date 04-03-24. File name: Fort Watt Storage_Opt2-Conceptual Siteplan_2024-04-03
- /4/ "TR_PT2_CATL_Cell UL9540A Test Report_CCR_20240124". Cell Test Report, UL 9540A, Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems (AACD), UL Solutions, 2023-09-18.
- /5/ "TR_PT2_CATL_Module UL9540A Test Report_CCR_20240124". TUV Rheinland, Sungrow Power Supply Co., Ltd, Energy Storage Battery Pack, Test Report, 2023-12.
- /6/ "TR_PT2_CATL_Unit UL9540A Test Report_CCR_20240124". TUV Rheinland, Sungrow Power Supply Co., Ltd, Battery Rack, Test Report, 2023-12.
- /7/ "PT2.0_NFPA69_report_CCR_20240407". TUV Rheinland, Sungrow Power Supply Co., Ltd, Energy Storage System, Test Report, 2024-02.
- /8/ Average Temperature in Kennedale TX. <https://weatherspark.com/y/8120/Average-Weather-in-Kennedale-Texas-United-States-Year-Round>.
- /9/ Center for Chemical Process Safety (CCPS). *Guidelines for Chemical Process Quantitative Risk Analysis*. Second Edition, New York City, NY, USA.: AIChE CCPS, Inc. 2010
- /10/ International Association of Oil & Gas Producers, 2009. Evacuation Escape and Rescue, DNV report no. 32338533, rev2, August 2009
- /11/ Centers for Disease Control and Prevention (CDC), The National Institute for Occupational Safety and Health (NIOSH), NIOSH Pocket Guide to Chemical Hazards.
- /12/ DNV, "Considerations for ESS Fire Safety," 2017.
- /13/ American Petroleum Institute, Pressure-relieving and Depressuring Systems, API STD 521, 5th Ed., Washington DC, 2008.



About DNV

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APPENDIX I: Study Basis



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2	KEY ASSUMPTIONS AND MODEL INPUTS.....	2
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1 BACKGROUND

Cypress Creek Renewables, LLC has requested DNV Energy USA Inc. (DNV) to perform a consequence evaluation of a lithium-ion battery energy storage system (BESS) in Kennedale, Tarrant County, Texas.

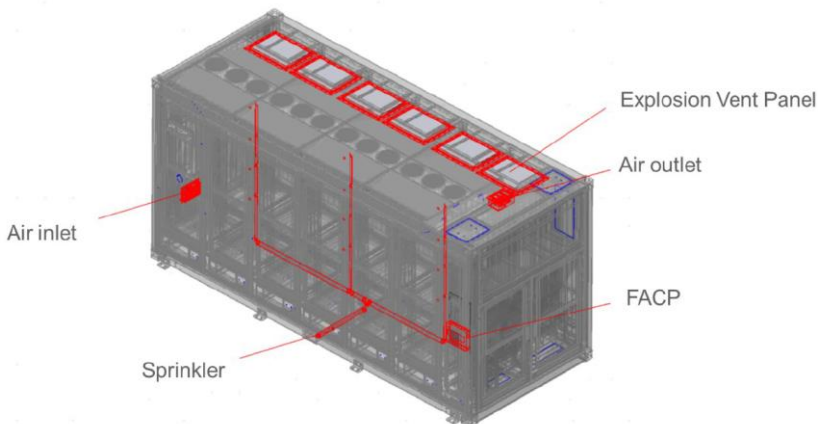
The main objective of the study is to determine the potential flammable and toxic dispersion and thermal radiation hazard zones resulting from the potential consequences of a series of defined battery failure scenarios.

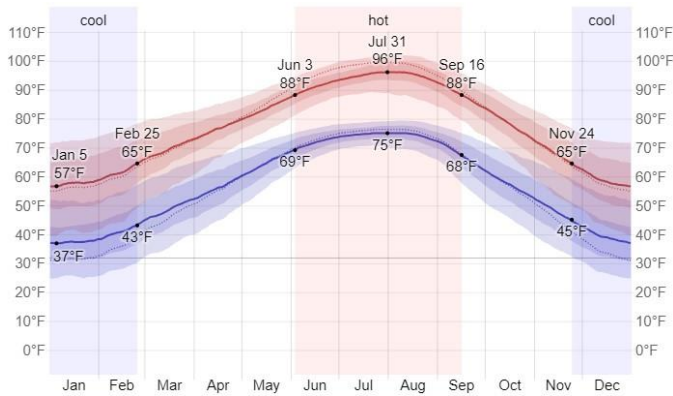
To meet the objective of the assessment DNV will utilize its proprietary software tool, PHAST, to perform release and hazard consequence modeling for the range of release scenarios, weather conditions and endpoints.

This document presents an overview of the assumptions and key information used for this study.

These assumptions form the basis for the study. If any of these assumptions are altered, the results presented for the study are no longer valid. Consequently, alteration of any of these assumptions may generate a need for an update of the analysis.

2 KEY ASSUMPTIONS AND MODEL INPUTS

Input/Assumption Item	Description																														
Software Used for Modeling	Phast v9.0 Phast is a free-field model meaning it does not take into account any effects on a release from obstacles or elevation changes in the path of the release.																														
Battery Specifications	Battery chemistry is LFP (lithium iron phosphate) There are 104 cells per module and 8 modules (832 cells) per rack. 1 battery cabinet consists of 6 racks (4992 cells per cabinet) (/1/)																														
Cell Details	Approximate dimension for a cell is (174.26±0.8) mm *(71.55±0.8) mm *(207.1±0.8) mm (L x W x H). The mass of a cell is 5.49±0.3 Kg (/3/).																														
BESS Container Details	1 BESS system (SUNGROW PT2.0) has dimensions of: 6.058 m x 2.896 m x 2.438 m (W x H x D) (/1/) Note there are two cabinets back-to-back on a skid in the Fort Watt facility design. 																														
UL 9540A Test Results	The UL 9540A cell, module and unit test reports to evaluate thermal runaway propagation in the battery cube were provided as input to the evaluation (/3/, /4/, /5/). The composition of the off-gas is tabulated in the following table based on the summary of the cell test report (/3/). <table border="1"> <thead> <tr> <th>Material</th><th>Vol%</th></tr> </thead> <tbody> <tr><td>Carbon monoxide</td><td>12.642</td></tr> <tr><td>Carbon dioxide</td><td>26.413</td></tr> <tr><td>Hydrogen</td><td>46.491</td></tr> <tr><td>Methane</td><td>7.016</td></tr> <tr><td>Acetylene</td><td>0.158</td></tr> <tr><td>Ethylene</td><td>3.111</td></tr> <tr><td>Ethane</td><td>1.174</td></tr> <tr><td>Propylene</td><td>0.422</td></tr> <tr><td>Propane</td><td>0.154</td></tr> <tr><td>Butane, C4 total</td><td>0.657</td></tr> <tr><td>Pentane, C5 total</td><td>0.200</td></tr> <tr><td>Hexane, C6 total</td><td>1.495</td></tr> <tr><td>Benzene</td><td>0.058</td></tr> <tr><td>Toluene</td><td>0.008</td></tr> </tbody> </table> The lower flammability limit (LFL) based on the defined mixture at 25°C ambient temperature is 5.6% (calculated from Phast). Based on the cell test, the estimated total volume of gas from a single cell is 176 liter (0.176 m³) (/3/).	Material	Vol%	Carbon monoxide	12.642	Carbon dioxide	26.413	Hydrogen	46.491	Methane	7.016	Acetylene	0.158	Ethylene	3.111	Ethane	1.174	Propylene	0.422	Propane	0.154	Butane, C4 total	0.657	Pentane, C5 total	0.200	Hexane, C6 total	1.495	Benzene	0.058	Toluene	0.008
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Carbon monoxide	12.642																														
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Benzene	0.058																														
Toluene	0.008																														
Release Scenarios	A range of release scenarios are evaluated: 104-cells (1 module) failure with duration over 10 min 1 rack failure (832 cells) with duration over 1 hour																														

Input/Assumption Item	Description
	1 cabinet failure (6 racks; 4992 cells) with duration over 3 hours Although the UL 9540A unit test results did not give indication of thermal propagation between modules and racks (/4/, /5/), the above scenarios are proposed to evaluate conservative scenarios. Note that the assumed durations are also conservative. Propagation of the module failures if possible would take time to spread through the modules and cubes within the cabinet. This study has not evaluated the time for potential propagation between cells and modules for thermal runaway.
Toxic Gases	Carbon monoxide (CO), benzene and toluene were recorded in the off-gas compositions and thus will be modeled for toxic dispersion. 1000 ppm (0.001%) of Hydrogen Fluoride (HF) is also included in the off-gas composition based on DNV experience of battery failure tests.
Fire Modeling	The UL 9540A cell, module and unit tests (/3/, /4/, /5/) did not see external flaming during the test evaluations. For the thermal radiation evaluation, an external flame is assumed possible and present. Note that Phast is a free field model and does not account for the geometry of obstacles or potential shield of thermal radiation. The model will assume that the walls of the cabinet have failed and there are external flames to the cabinet. The cabinet length of 6.058 m is conservatively assumed to be the pool fire size; hence the resulting radiation zones will be conservative.
Explosion Modeling	No explosion modeling is considered within the work scope.
Exhaust Fan	The container is equipped with flammable gas detector and exhaust vent. The flammable gas detector is calibrated to 10% LEL (/7/). If the flammable gas detector is triggered, the ventilation system is activated. The ventilation flow rate is conservatively assumed as 283 CFM, as in the Energy Storage System test report (/6/). The size of grate for air change is 347 mm x 248 mm x 88 mm, equivalent to surface area of 0.086 m² (/6/).
Release Elevation	The release elevation for the plume modeling is assumed to be at the height of the exhaust (outlet near top). The exhaust fan is at the top of the cabinet at a height of about 2.896 m. The discharge is assumed at this height above ground level.
Release Direction	Releases will be modeled as vertical as the off-gassing valve is mounted on the top of the battery cabinet.
Wind and Stability Conditions	The atmospheric stability and wind speed impact the consequence modeling. The following representative wind speed and stability class are assumed: - F2 – atmospheric stability F and wind speed of 2 m/s (4.5 mph) – Typically produces more severe dispersion consequences due to stable wind conditions which results in less turbulence and dilution of the vapor cloud. - D5 – atmospheric stability D and wind speed of 5 m/s (11 mph) – Represents neutral atmospheric conditions, either during day or night. Typically produces less severe dispersion consequence zones as the greater wind speed promotes more mixing.
Atmospheric Temperature	The average high annual temperature, 96 °F (/1/) is applied to the model to address the worst case. The same is assumed for the surface and ground temperatures. 

Input/Assumption Item	Description															
Relative Humidity & Atmospheric Pressure	The extreme low humidity, 10%, is applied to the model to address the worst case. Atmospheric pressure is assumed as default, 1 atm.															
Surface Roughness Length	Low congestion level with low surface roughness (30 mm, open flat terrain; grass, few isolated objects)															
Hazard Endpoints	Flammable dispersion results are reported at downwind distances from the release source at the lower flammability level (LFL) concentration and half-LFL concentration. The fire thermal radiation consequence results are provided at downwind distances from the release source at the following radiation levels (/8/ and /9/): 37.5 kW/m² – Sufficient to cause damage to process equipment, 100% lethality 12.5 kW/m² – Extreme pain within 20 sec and fatality (30% lethality) could occur if escape is not possible. 5 kW/m² – Pain in 15 to 20 sec and injury after a 30-sec exposure. The following toxic dispersion endpoints are adopted for application within the modeling (/10/): <table><tr><th>Material</th><th>ERPG-3 (ppm)</th><th>ERPG-2 (ppm)</th></tr><tr><td>Hydrogen Fluoride (HF)</td><td>50</td><td>20</td></tr><tr><td>Carbon Monoxide (CO)</td><td>500</td><td>350</td></tr><tr><td>Benzene</td><td>1000</td><td>150</td></tr><tr><td>Toluene</td><td>1000</td><td>300</td></tr></table> ERPG (Emergency Response Planning Guideline) concentrations are developed by the American Industrial Hygiene Association. ERPGs estimate the concentrations at which most people will begin to experience health effects if they are exposed to a hazardous airborne chemical for 1 hour. (Sensitive members of the public—such as old, sick, or very young people—aren't covered by these guidelines and they may experience adverse effects at concentrations below the ERPG values). - ERPG-3 is the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects. - ERPG-2 is the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action.	Material	ERPG-3 (ppm)	ERPG-2 (ppm)	Hydrogen Fluoride (HF)	50	20	Carbon Monoxide (CO)	500	350	Benzene	1000	150	Toluene	1000	300
Material	ERPG-3 (ppm)	ERPG-2 (ppm)														
Hydrogen Fluoride (HF)	50	20														
Carbon Monoxide (CO)	500	350														
Benzene	1000	150														
Toluene	1000	300														
Receptor Height	The reporting of the hazard zones is assumed at 1 m above ground level and at elevations of maximum extent.															
Key Outputs from Phast to be Reported	Tables with maximum downwind hazard distances at each relevant endpoint. Key side views and aerial footprint views of the hazard zones at each endpoint. Potential impact to surrounding locations will be evaluated and discussed.															

3 REFERENCES

- /1/ "Plume Study RFI.xlsx". Email from Jacob Gubbrud "RE: Fort Watt Plume Study" April 8, 2024.
- /2/ Average Temperature in Kennedale TX. <https://weatherspark.com/y/8120/Average-Weather-in-Kennedale-Texas-United-States-Year-Round>.
- /3/ "TR_PT2_CATL_Cell UL9540A Test Report_CCR_20240124". Cell Test Report, UL 9540A, Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems (AACD), UL Solutions, 2023-09-18.
- /4/ "TR_PT2_CATL_Module UL9540A Test Report_CCR_20240124". TUV Rheinland, Sungrow Power Supply Co., Ltd, Energy Storage Battery Pack, Test Report, 2023-12.
- /5/ "TR_PT2_CATL_Unit UL9540A Test Report_CCR_20240124". TUV Rheinland, Sungrow Power Supply Co., Ltd, Battery Rack, Test Report, 2023-12.
- /6/ "PT2.0_NFPA69 report_CCR_20240407". TUV Rheinland, Sungrow Power Supply Co., Ltd, Energy Storage System, Test Report, 2024-02.
- /7/ SUNGROW, "FSS Design, PowerTitan2.0(US)", v5
- /8/ Center for Chemical Process Safety (CCPS). *Guidelines for Chemical Process Quantitative Risk Analysis*. Second Edition, New York City, NY, USA.: AIChE CCPS, Inc. 2010
- /9/ International Association of Oil & Gas Producers, 2009. Evacuation Escape and Rescue, DNV report no. 32338533, rev2, August 2009
- /10/ Centers for Disease Control and Prevention (CDC), The National Institute for Occupational Safety and Health (NIOSH), NIOSH Pocket Guide to Chemical Hazards.



Brazos Bend Energy Storage System

EMERGENCY RESPONSE PLAN

Rev .03 | December 24th, 2023

Summary

This document serves as the Emergency Response Plan (ERP) for the Brazos Bend Energy Storage System to be located at 3329 River Road, Rosenberg, Texas 77471 in Fort Bend County.

This ERP provides information and instructions to guide first responders in preparing for, and safely responding to, an incident, fire, or other emergency associated with the energy storage facility.

LIFE SAFETY SHALL BE THE HIGHEST PRIORITY DURING ANY TYPE OF EVENT

Prepared For:

Cypress Creek Renewables
3402 Pico Boulevard
Santa Monica, California 90405

Energy Safety Response Group
8350 US HWY 23 N
Delaware, OH 43015
www.energysresponsegroup.com
1-833-SAFE-ESS

PROJECT INFORMATION

Project Name	Brazos Bend Energy Storage System
Project No.	23-20339
Prepared For	Cypress Creek Renewables
Revision No.	Rev .03
Document No.	23-20339-E-D02
Date of Issue	12/24/2023

Prepared By: Michelle Hoffman Emergency Response & Training <i>Michelle.Hoffman@energyresponsegroup.com</i> _____ Date: _____	Reviewed and Approved By: Tom Bensen Principal, co-Founder <i>Tom.Bensen@energyresponsegroup.com</i> _____ Date: _____
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REVISION HISTORY

Revision No.	Date of Issue	Substance of Change
Rev .01	08/14/2023	Draft issue
Rev .02	08/24/2023	Revisions
Rev .03	12/24/2023	Revisions

Note 1: The information in this document is subject to change while in DRAFT status and may be modified in the event of modifications to equipment or other factors affecting the design of the system or site.

Note 2: During the operating life span of the project, it is expected that this document shall be reviewed annually, and that all pertinent information shall be appropriately updated as necessary. This ERP is compiled based upon current design and usage at the time of this writing. (See Appendix E)

Note 3: Highlighted items to be finalized prior to commissioning.

IMPORTANT NOTICE AND DISCLAIMER

Energy Safety Response Group LLC (ESRG) is providing this “draft” Emergency Response Plan (ERP) based on information supplied to ESRG to date for the Brazos Bend Energy Storage Facility. This “draft” Emergency Response Plan shall not be implemented for an actual incident. This document is intended to serve as a living document that will be developed into a site-specific Emergency Response Plan (ERP) once an on-site ESRG visit is performed to confirm “as built” and accurate information.

Industry, related technology, and best practices are rapidly evolving and changing regularly. It has been observed that changes often occur to a project through the construction phase, whether it be to the battery itself or to the balance of system.

The contents of this document are in no way meant to be exhaustive and do not address every potential scenario associated with the subject matter of the document. Site and circumstance-specific factors and real-time judgment and reason may significantly impact some of the subject matter conveyed in this document. Additional resources and actions, which may be beyond the scope of this document, may be required to address specific issues. Additionally, laws, ordinances, regulatory standards, and best practices related to the contents of this document are subject to change or modification.

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IMPORTANT INFORMATION	
	This Notice and Disclaimer are important to clarify and understand the status of this document.

Local Emergency Contact Information

CONTACT	CONTACT INFORMATION
Local and State Emergency Response Agencies	Emergency: 911
Fire Department	Rosenberg Fire Department 1021 4 th Street Rosenberg, Texas 77471 (832) 595-3620 (Non-Emergency)
Law Enforcement	Rosenberg Police Department 2120 4 th Street Rosenberg, Texas 77471 (832) 595-3700 (Non-Emergency)
Emergency Room	OakBend Medical Center 1705 Jackson Street Richmond, Texas 77469 (281) 341-3000 (Non-Emergency)
Burn Center	Memorial Hermann- Texas Medical Center 6411 Fannin Street Houston, Texas (713) 704-4000 (Non-Emergency)
Level I Trauma Center	Memorial Hermann- Texas Medical Center 6411 Fannin Street Houston, Texas (713) 704-4000 (Non-Emergency)
BESS Emergency Call Center Cypress Creek Control Center	(984) 789-2912
Subject Matter Expert (SME) Jacob Gubbrud	(319) 230-5465

SITE SPECIFIC DEFINITIONS AND ACRONYMS

Battery Energy Storage System (BESS)	Stationary equipment that receives electrical energy and then utilizes batteries to store that energy to supply electrical energy at some future time. The BESS, at a minimum, consists of one or more modules, a power conditioning system (PCS), battery management system (BMS) and balance of plant components.
Battery Management System (BMS) or Local Plant Controller (LPC)	A system that monitors, controls, and optimizes performance of an individual or multiple battery modules in an energy storage system and has the ability to control the disconnection of the module(s) from the system in the event of abnormal conditions. This system can be completely independent of the ESMS.
Cypress Creek Renewables Control Center (C4)	Provides 24/7 continuous monitoring of the BESS.
Emergency Response Plan (ERP)	A documented set of actions to address the planning for, management of, and response to natural, technological, and man-made disasters and other emergencies.
Emergency Stop Button (E-Stop)	An emergency stop push button switch is used as a safety measure to stop hazardous parts (loads).
Energy Management System (EMS)	A system that monitors, controls, and optimizes the performance of an energy storage system and has the ability to control the disconnection of the energy storage system in the event of abnormal conditions.
Heating Ventilation Air Conditioner (HVAC)	The system that regulates and moves heated and cooled air throughout the container.
Human Machine Interface (HMI)	A system is used to monitor and simulate the control performance. The results show that the PLC approach provides an efficient and reliable control of the BESS in which a compact protection against the battery overcharging, under-discharging, and overheating is achieved.
Incident Command System (ICS)	Unified Command is a team effort process, allowing all agencies with geographical or functional responsibility for an incident, to assign an Incident Commander to a Unified Command organization to work together effectively.
Lower Flammability Limit (LFL)	The lowest percentage of a product's vapor or gas in the air that's capable of igniting when exposed to an ignition source, such as an arc, spark, heat, or flame.
Lock-Out-Tag-Out (LOTO)	The placement of a lockout device and tag on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.
Off-Gassing	The event in which the cell case vents due to a rise in internal pressure of the cell.

Overcurrent Protection Devices (OCPD)	Overcurrent protection simply means a fuse, breaker, or fusible link is used to protect the equipment, a circuit in the equipment, or the equipment's wiring.
Personal Protective Equipment (PPE)	Personal protective equipment, commonly referred to as “PPE”, is equipment worn to minimize exposure to a variety of hazards.
Self-Contained Breathing Apparatus (SCBA)	A self-contained breathing apparatus, or SCBA, is the foundational tool that provides the greatest amount of airway protection from toxic gas and harmful particulates resulting from the fire.
Stranded Energy	The energy remaining in a cell after efforts to safely discharge the stored energy in damaged lithium-ion cells.
Subject Matter Expert (SME)	During an incident at the facility where Public Safety response is summoned, Cypress Creek Renewables shall make a Subject Matter Expert (SME) available for the duration of the event. The SME's responsibility is to serve as a liaison between public safety and the facility. The SME shall understand the facility operation in detail, public safety terminology, communication, and the incident command structure; shall have an in-depth knowledge of the site-specific emergency response plan and overall understanding of response to energy storage facility incidents; shall assist in alarming, telemetry, shut-down procedures, and site-specific hazards.
Surge Protection Device (SPD)	Surge Protective Devices (SPD) are used to protect the electrical installation, which consists of the consumer unit, wiring and accessories, from electrical power surges known as transient over voltages.
Thermal Runaway	An incident where an electrochemical cell increases its temperature through self-heating in an uncontrollable fashion and progresses when the cell's heat generation is at a higher rate than it can dissipate, potentially leading to off-gassing, fire, or explosion. NFPA 855 – 2023,3.3.26 Self-heating of an electrochemical system in an uncontrollable fashion.
Upper Flammability Limit	The inverse of LFL/LEL, or the point at which the air has become too fuel rich to sustain combustion.

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1 INTRODUCTION

1.1 Scope and Purpose

This Emergency Response Plan (ERP) is provided for the Brazos Bend (BESS) facility located at 3329 River Road, Rosenberg, Texas 77471. The purpose of this document is to provide information and instructions to guide public safety-first responders in safely responding to, a fire, explosion, or other battery-related emergency event that requires a public safety response at the Brazos Bend Energy Storage Facility.

Life safety shall be the highest priority during any type of event.

1.2 Activation

This Emergency Response Plan shall be activated during any emergency response to a battery-related incident on-site.

1.3 ERP Update Process

1.3.1 Issuance and Revisions

Dates for draft issuance, revisions, and final issuance of this ERP are provided on page 2 of this document.

Updates to this ERP based on any system or operating changes to the installation are the responsibility of the System Owner / Operator and other relevant entities.

1.3.2 Annual Review

During the operating life span of this installation, it is expected that this document shall be reviewed annually, with all pertinent information updated as required.

Life safety shall be the highest priority during any type of event.

2 Site Overview

Site Location (Figure1 & 2)

SITE LOCATION	
Address	3329 River Road Rosenberg, Texas 77471
GPS Coordinates	29.56443°, -95.79237°

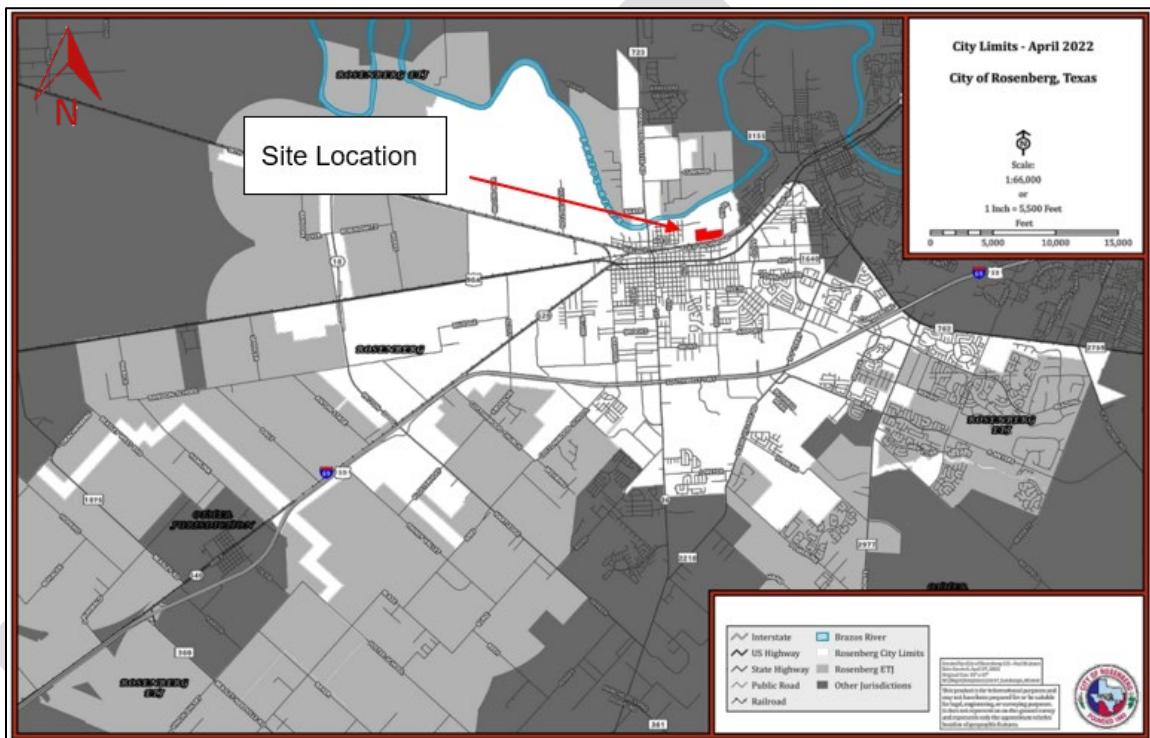


Figure 1: Site Map – Navigation



Figure 2: Site Location – Satellite

3 System Overview

System Overview	
BESS Make / Model	SUNGROW PowerTitan ST2236UX
Battery Technology (Safety Data Sheets – Appendix A),	CATL Co., LTD. CB310/CB2W0 Lithium Iron Phosphate (LFP)
Total BESS Power / Energy Capacity	100MW/100MWh
Enclosure Count/Layout (See Figure 3)	60 Enclosures
Inverter (See Appendix C)	There are 30 inverters (each inverter services two enclosures) on the project site.
Back-Up Power	There is an on-site UPS for the facility to provide auxiliary power for 12-hours for controls and communication and 8-hours for fire detection/protection.

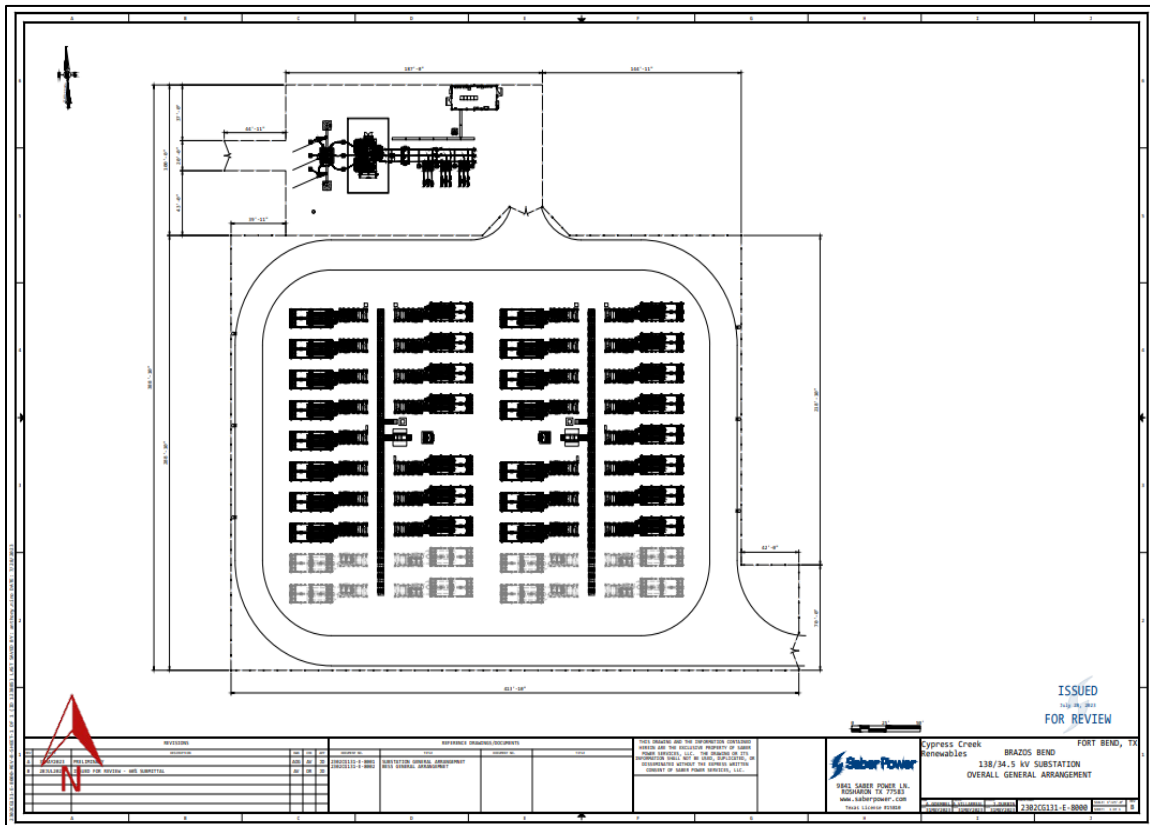


Figure 3: Site Layout

3.1 System Protection Features

System Protection Features (Figure 4)	
Smoke Detection	There are two (2) smoke detectors located inside of each battery enclosure.
Thermal Detection	There are two (2) thermal detectors located inside of each battery enclosure.
Flammable Gas Detectors	There are two (2) flammable gas detectors located inside of each battery enclosure.
Exhaust Ventilation	The exhaust ventilation system is designed in accordance with NFPA 69 to remove flammable gases released during a potential battery failure from the enclosures before explosive limits can be reached.
Emergency Stop Buttons	There is one Emergency Stop Button (E-Stop) located on the System/Enclosure. The

	activation of an E-Stop will immediately open all BMS DC contactors.
Deflagration Protection	The Sungrow ST2236UX is equipped with explosion prevention system designed in accordance with NFPA 69 to automatically exhaust flammable gases before they are allowed to accumulate and create an explosive atmosphere within the enclosure.

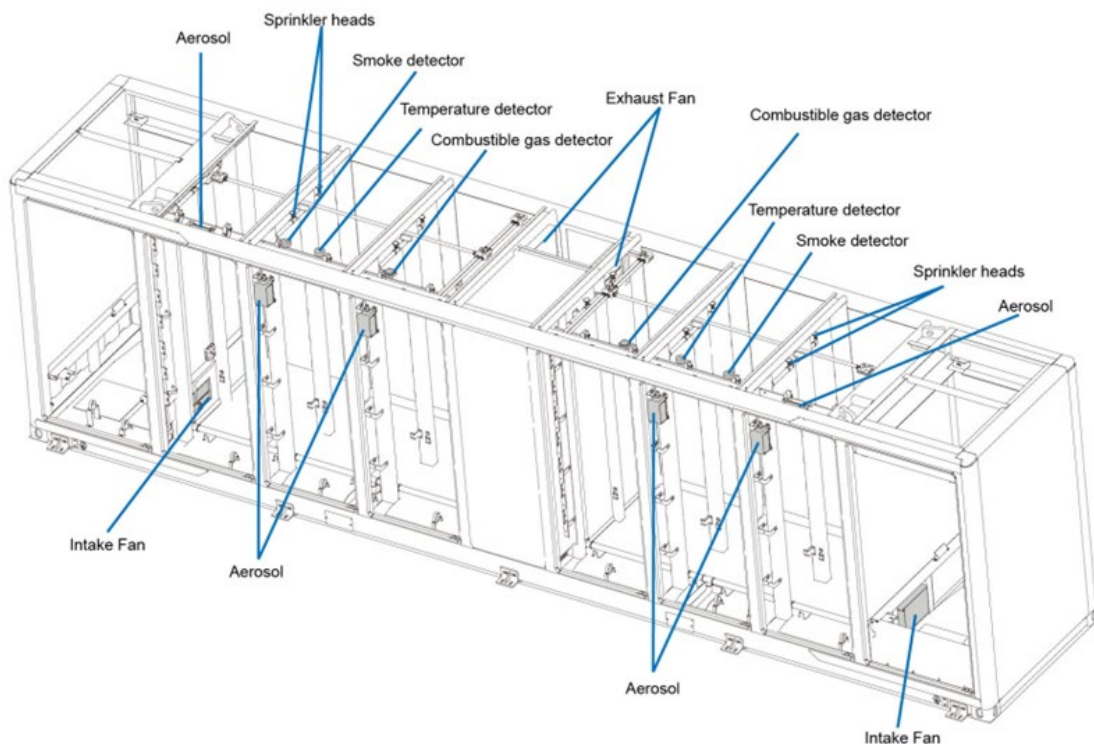


Figure 4: Sungrow PowerTitan ST2236UX Safety Feature Placement

3.2 Site Access

The project site is enclosed with protective chainlink fencing. Fire Department access is available via gated entrance at the SE corner of the site off of River Rd. The fire Department should not attempt to enter the site fence line unless there is a threat to life safety. (Figure 5)



Figure 5: Site Map with Critical Locations (To be updated as information becomes available)

3.3 Fire Department Staging and Incident Command

Staging for the Fire Department is... (TBD) (Figure 5)

3.4 Muster Points (Accountability)

The Brazos Bend Energy Storage Facility is an unmanned/unoccupied site, with the exception of periodic equipment inspections, monitoring and testing, and maintenance as needed.

Should there be an incident with personnel on site, site personnel shall go to the primary designated muster area as identified in Figure 5 and immediately contact their supervisor. Site personnel shall not leave the designated muster area until accountability has been conducted or otherwise directed by Public Safety personnel.

3.5 Water Supply

Primary Fire Department Water Source: Apparatus, supplemented by water shuttles.

3.6 Entry into Containers

All components of the Sungrow ST2236UX are housed in an enclosure-style enclosure with access for maintenance provided via the enclosure doors. The enclosure cannot be physically entered by any person and therefore is not considered a walk-in container, occupied building, or structure as defined by NFPA 855 and IFC. (Figure 8)

The fire department shall not make forced entry into any enclosures during an emergency event. Should the doors come open during an event, the fire service may direct water streams into the enclosure, but they shall not otherwise enter or access the inside of the enclosure during or after an emergency event.

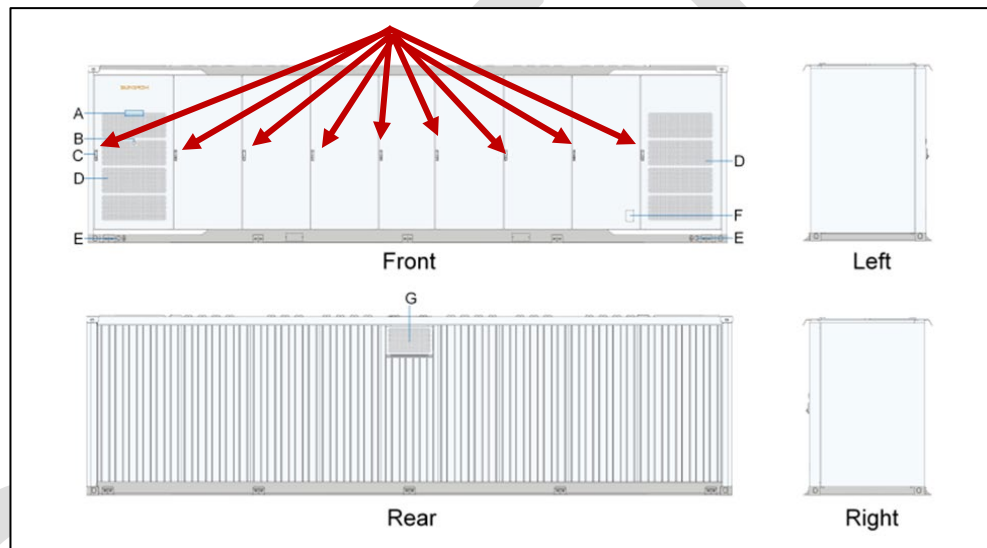


Figure 6: Sungrow ST2236UX Enclosure with Access to Enclosure

3.7 Nearby Exposures

The Brazos Bend energy storage facility is located in a suburban area, with multiple nearby exposures in the area which may be affected in the event of a battery-related failure on-site. The nearest exposures include:

- Residential homes located approximately 700 ft W of the nearest ESS unit.
- A water treatment plant is located approximately 350 ft N of the nearest ESS unit.
- A rail line is located approximately 250 ft S of the nearest ESS unit.
- Electrical substation located approximately 250 ft W of the nearest ESS unit.

Though these exposures may be affected by a battery related failure event, off-gassing or smoke is the highest risk factor within the distances for this project. Experience has shown that at these distances, smoke and off-gas dissipates, greatly reducing potential impact to the exposures. The closest infrastructure is 250 ft away, which is outside of the hazard boundary for a deflagration event.

3.8 Site Maintenance

The facility's interior access roads shall be maintained to guarantee accessibility to the site by emergency personnel, especially during inclement weather. Cypress Creek Renewables will ensure landscaping and other ongoing upkeep activities are in place prior to construction.

4 Fire Protection Systems

4.1 Fire and Gas Detection

Each Sungrow ST2236UX enclosure comes with two (2) smoke detectors, two (2) thermal detectors, and two (2) flammable gas detectors. This is used to monitor the temperature of the interior environment of the enclosure and will monitor temperature and heat increases.

The smoke detectors will trigger upon detection of smoke product within the battery enclosure. Upon activation of the smoke detector, a signal is sent to the EMS which will then send a fire signal to the fire alarm in the main station. The fire signal will also be sent to the Battery System Controller (BSC). The BSC will send a fire signal to the local controller and open DC contactors of switchgear and stop the cooling system.

The thermal detectors will trigger upon sensing a rise in temperature within the battery enclosure. Upon activation of the thermal detector, a signal is sent to the EMS which will then send a fire signal to the fire alarm in the main station. The fire signal will also be sent to the Battery System Controller (BSC). The BSC will send a fire signal to the local controller and open DC contactors of switchgear and stop the cooling system.

The flammable gas detector will trigger if the interior of the battery enclosure reaches 10% Lower Explosive Limit (LEL) of the volume of the enclosure. Upon activation of the flammable gas detector, the ventilation and exhaust system will be opened. The system consists of two (2) 100 CFM fans (200 CFM total) per compartment that are triggered by included gas detectors.

4.2 Exhaust Ventilation System

Each Sungrow ST2236UX enclosure is equipped with an active mechanical exhaust ventilation system designed in accordance with *NFPA 69 Standard on Explosion Prevention Systems* to control the concentration of combustible vapors released during cell failure and maintain a concentration below 10% Lower Explosive Limit (LEL) of the volume of the enclosure.

Each Sungrow ST2236UX enclosure has 2 internal Liquid Cooling Systems.

The combustible gas alarm system and the emergency ventilation system are installed in the battery container for fire warning. If the combustible gas concentration reaches 10% LEL, the combustible gas detector acts and transmits the fire alarm signal to the EMS outside the container, which will then start the ventilation system through the control module and send the fire alarm signal to the Battery Management System (BMS) to shut down the system.

The ventilation and exhaust system mainly includes ventilation inlet and exhaust fan windows. The ventilation inlet and exhaust windows are equipped with electric shutters, which can be started and closed according to the needs of the system, and it has a protective structure on the outside. Ventilation and exhaust systems can control and reduce the explosion hazard.

The air volume of the fan in the exhaust system is 200m³/h. This gives an air exchange rate inside the enclosure of twenty-nine (29) air changes per hour (ACH) according to calculations provided by Sungrow.

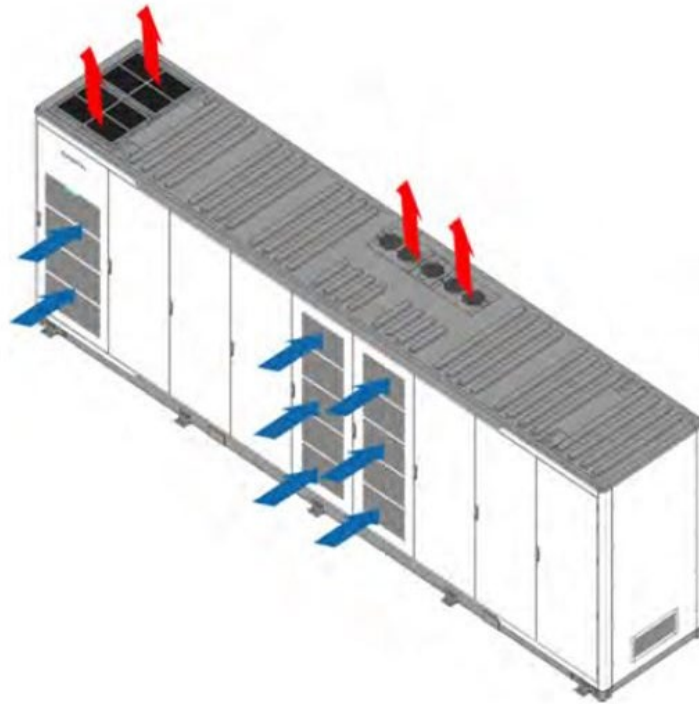


Figure 7: System Ventilation

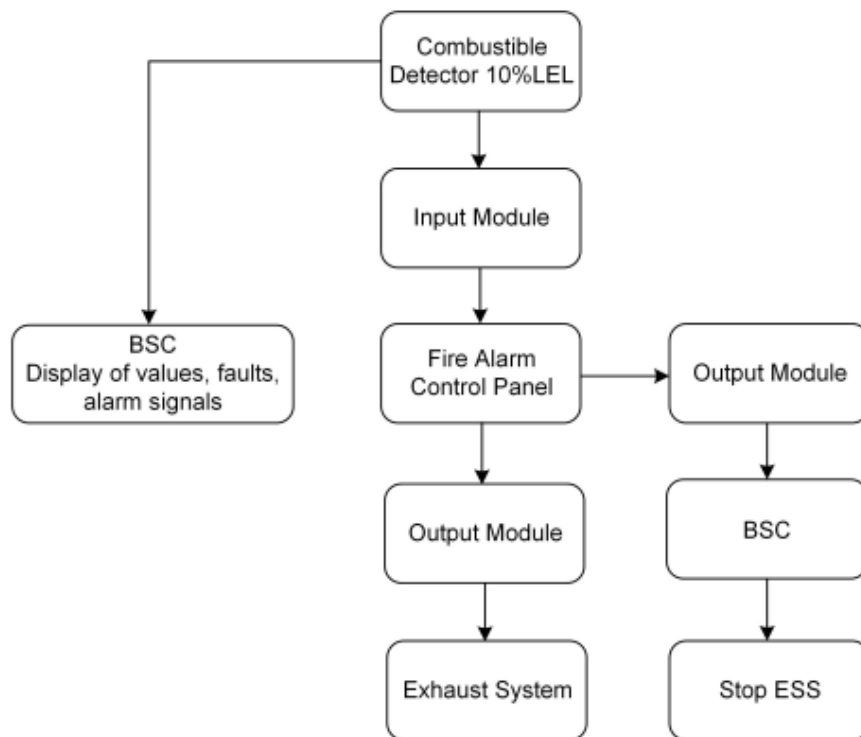


Figure 8: Control Logic of Exhaust System

DANGER: Risk of Explosion / Deflagration	
	An explosion / deflagration / over-pressure event is a critical hazard, and any emergency on-site should always be addressed with full awareness of potential factors which may lead to such an event. <u>Any failure or alarm condition should result in the assumption of an explosion risk.</u>

DANGER: Risk of Re-ignition	
	Do <u>NOT</u> assume the fire is out as the fire event unfolds. A lithium-ion battery fire which has seemingly been extinguished may flare up again if all cells within the enclosure have not been completely consumed.

4.3 Emergency Shutoffs

Emergency shutoff is provided at multiple levels, though the Fire Department should not engage with E-Stops, as ESS shutdown may adversely affect the electrical grid.

The Fire Department should not engage with E-Stops, as ESS shutdown may adversely affect the electrical grid. Any interaction with E-Stops should only be initiated in coordination with the System Owner and other SMEs as is deemed necessary.

4.3.1 Automatic E-Stop

Upon activation of a heat, smoke, or gas detector, all battery racks in the enclosure are disconnected from the ESS block. Auxiliary power (230 VAC and 24 VDC) shall remain connected to the BMS and exhaust ventilation system.

4.3.2 Site-Level E-Stop

There is a site level E-Stop located with the Fire Alarm Control Panel.

The Fire Department should not engage with E-Stops, as ESS shutdown may adversely affect the electrical grid. Any interaction with E-Stops should only be initiated in coordination with the System Owner and other SMEs as is deemed necessary.

4.3.3 Enclosure-Level E-Stop

Each Sungrow ST2236UX enclosure is equipped with a physical E-stop button, though this is intended for maintenance purposes only and the Fire Department should not attempt to engage this E-stop.

4.3.4 PCS E-Stop

Each PCS (inverter) has a physical E-stop. An inverter services three (3) BESS enclosures. Activation of the PCS E-stop will rapidly shut down the PCS and send an emergency signal to the LC. The LC will shut off all other PCSs in the block and isolate all affected racks. Even after substation power lines are isolated from a BESS, the battery enclosure may still be powered by a 230V UPS to supply back-up power to the exhaust ventilation system. (Initiation of E-Stop stops charge and discharge of system and critical systems on back-up power.)

In the event of a battery-related failure, the Fire Department should not approach any battery enclosures or engage with any enclosure E-Stops.

DANGER: Risk of Stranded Energy



Shutting off power to the ESS unit(s) does not de-energize the battery and shock hazard may still be present. Always treat the batteries as Energetic Hazardous Materials, as they may maintain their State of Charge (SOC) long after the removal of power to the overall ESS.

DANGER: Risk of Fire and Explosion



The risk of fire or explosion may be present in the event of a battery failure. The Fire Department should not attempt to engage with any site or enclosure E-stops. Assistance in shutdown should be provided by the System Owner / Operator and any other required SMEs.

DANGER: Electrical Shock Hazard	
	In case of flooding, stay out of the water if any part of the ESS unit(s) or wiring is submerged.

4.4 Battery Management System (BMS)

The Battery Management System (BMS) adopts a three-level management structure design, which are:

- Level 1: Battery Management Unit (BMU)

Built into the PACK, manages the cells inside a single PACK.

- Level 2: Battery Cluster Management Unit (CMU)

Built into a switch gear (S/G) or DC/DC to manage PACKs within a single battery cluster.

- Level 3: Battery System Controller (BSC)

Built into the Battery Supply Panel (BSP) in battery cabinet, manages battery clusters within a single battery cabinet.

The Battery Management System (BMS) monitors cell and battery packs for immediate safety conditions or conditions that may affect battery performance. The BMS aggregates cell-level, battery pack-level, and rack-level data for reporting, and contains logic and parameters for generating warnings and alarm notifications to ensure that the battery is operating within safe margins.

TIME SERIES DATA STREAMS		
State of Charge State of Health Real Power (Actual) Real Power (Commanded) Reactive Power (Actual) Reactive Power (Commanded) POI Metered Data (Frequency, Current, Voltage) Market Telemetry Available Power and Capacity	PCS Status (RunPQ, Standby, Off) AC Voltage and Current DC Voltage and Current Max/Min Rack SOC Max/Min Rack SOH Max/Min Cell Temperatures Max/Min Cell Voltages Fault and Warning Statuses (PCS and BMS)	Fire Suppression Status Fire Panel Outputs HVAC Statuses Ambient Temperature Sensors Humidity GPS / Time / Date Weather Load / Generation Data Sensors and Meters More...

Figure 9: Available Telemetry Through BMS

A back up power system will provide power in the event of loss of normal operating power supply. The back up power system will provide 12 hours for system controls and communications, and 8 hours for fire detection/protection systems.

There are (4) UPS systems on site.

- The 125V DC UPS located in the Substation will provide backup power to the substation relays and Sudden Pressure Monitors on the Main GSU. Its backup time is designed according to IEEE 485.
- There is a 24V DC UPS in Fractal's EMS Enclosure that will provide a 20–30-minute backup for the components within.
- There is a 240V AC UPS (x2) in the field to provide UPS power to the Sungrow LC-1000 Local Controllers.

There is a 24V DC UPS (x4) in the field to provide UPS power to the Sungrow Gas Sensors.

Transmitted BESS telemetry will be available to Public Safety via authorized Cypress Creek Renewables on-site representative(s).

5 Fire Detection, Alarming, and Notification

5.1 Fire Detection

Each Sungrow ST2236UX is equipped with two (2) heat detectors, two (2) smoke detectors, and two (2) combustible gas detectors. Activation of these detectors

initiates independent safety functions depending on the criteria noted in Figure 10 below.

Actions Triggered Upon Heat, Smoke, and Gas Detection:

- **Single Detector Activation:** Activation of a heat, smoke, or gas detector will send an Alarm signal to the Fire Alarm Control Panel and Cypress Creek Controls Center.
- **Combustible Gas Detector Activation:** Activation of any combustible gas detector upon detection of 10% LFL will automatically activate the explosion prevention (exhaust) system for the enclosure, with an alarm signal that shall be sent to the EMS and Cypress Creek Control Center.

Trouble and Alarm Signals:

- **Trouble (Fault) Signal:** if there is a trouble signal, a fault indicator signal will be sent to the EMS.
- **Alarm Signal:** Activation of a single heat, smoke, or combustible gas detector shall result:
 - Alarm signal sent to the Central Station.
 - Alarm signal sent to the Cypress Creek Controls Center.
 - Emergency Power Off – all battery racks in the enclosure are disconnected from the ESS block. Auxiliary power (230 VAC and 24 VDC) shall remain connected to the BMS and exhaust ventilation system.

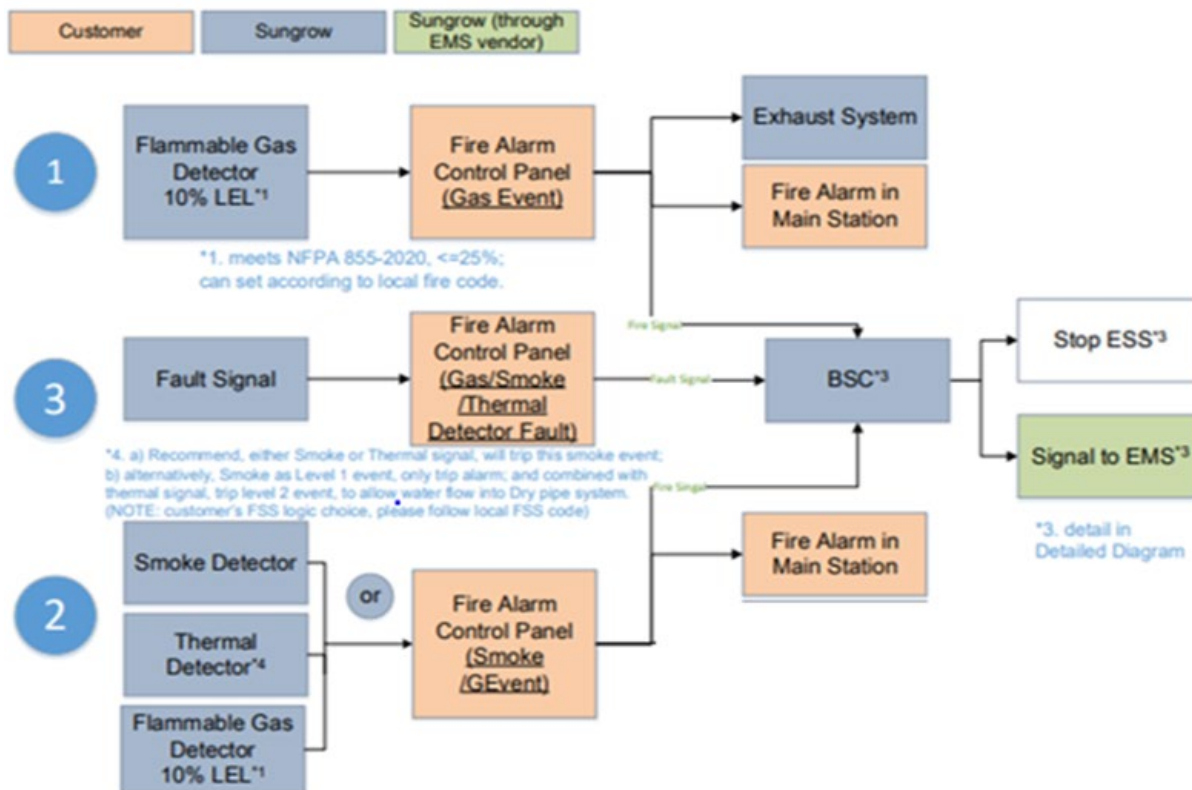


Figure 10: Sequence of Operations Table for the Battery System

5.2 Remote Control Center (C4)

In the event of fire detection via smoke, heat, or gas detectors, the EMS shall send Alarm and Trouble signals to the C4 Control Center which shall then be relayed to the local Fire Department dispatch station.

Cypress Creek Renewables Control Center

- Business Telephone: (984) 789-2912

6 GENERAL HAZARDS ASSOCIATED BATTERY ENERGY STORAGE SYSTEMS

There are five major risks posed by lithium-ion battery failures: **fire**, **explosion**, **electric shock**, **arc flash**, and **toxicity of by-products from off-gassing**. Off-gassing of flammable gas from damaged cells is also a unique characteristic of lithium-ion battery failures and should be looked for when arriving at the scene of a battery incident. (**Note:** Care shall be taken to differentiate between smoke and off-gas, if

unknown it shall be treated as off-gas due to the quantities of hydrogen and carbon-monoxide likely to be present.)

6.1 General Hazards

6.1.1 Fire and Re-ignition

Lithium-ion battery fires burn at extreme temperatures and are difficult to extinguish. Fire growth can be slow, fast, or ultra-fast, and may last hours until battery modules are completely consumed. There is a risk of re-ignition event after apparent extinguishment, which can persist for hours or days. Flames may sometimes arise violently and resemble jet flames.

DANGER: Risk of Re-ignition



Do **NOT** assume the fire is out as the fire event unfolds. A lithium-ion battery fire which has seemingly been extinguished may flare up again if all cells within the enclosure have not been completely consumed. The risk of battery re-ignition can remain present for hours or even days after the smoke / flame is initially detected.

NOTICE



Indicators which may provide insight into what is happening or about to happen during an incident may include:

- Smoke or flames
- Change in smoke color
- Change in velocity or volume of smoke production
- Sounds – popping and / or hissing
- Smell – sweet smell

6.1.2 Explosion

Accumulated flammable gases inside of a BESS enclosure may result in an explosion, if ignited. Given the size of the batteries in the system versus the volume of the container, even a single cell may create a flammability or explosion hazard inside the battery container. Therefore, responders should assume that any failure in the battery may create an explosive situation. This explosive event may be enough to open the doors mildly or much more violently, posing a risk to life and property. Any

approach to the container shall be at 45-degree angles off the corner of the container. (Figure 11)

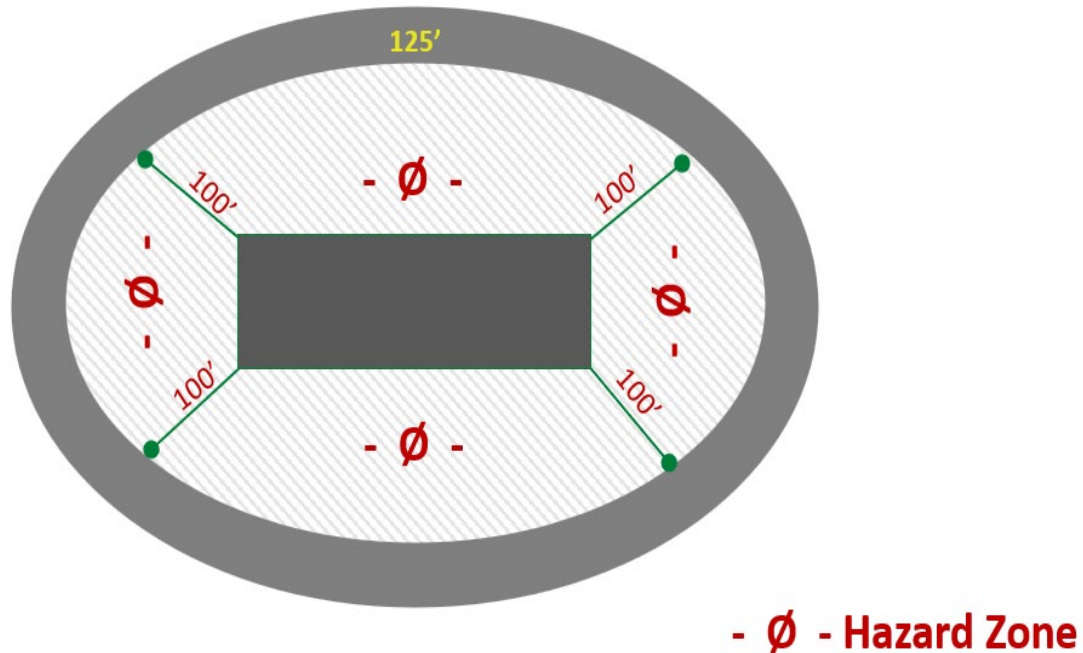


Figure 11: Managing the Incident

DANGER: Risk of Explosion / Deflagration	
	An explosion / deflagration / over-pressure event is a critical hazard, and any emergency on-site should always be addressed with full awareness of potential factors which may lead to such an event. <u>Any failure or alarm condition should result in the assumption of an explosion risk.</u>

6.1.3 Electric Shock

All ESS systems and related electrical equipment shall always be treated as energized (Energetic Hazardous Material). Even though a battery may look to be destroyed by fire and/or other means, there is great potential that the battery still has stranded energy and remains energized. The use of water, while effective at knocking down flame and cooling the batteries, may cause localized electrical arcing.

DANGER: Risk of Stranded Energy	
	Always treat the batteries as Energetic Hazardous Materials, as stranded energy is likely to remain present. Traditional Fire Department overhaul should not be conducted due to the potential for stranded energy.

6.1.4 Arc Flash

All ESS systems and related electrical equipment shall always be treated as energized (Energetic Hazardous Material). Even though a battery may look to be destroyed by fire and/or other means, there is great potential that the battery still has stranded energy and remains energized. An electrical explosion due to a fault condition or short circuit when either a phase-to-ground or phase-to-phase conductor is connected and current flows through the air.

DANGER: Risk of Stranded Energy	
	Always treat the batteries as Energetic Hazardous Materials, as stranded energy is likely to remain present. Traditional Fire Department overhaul should not be conducted due to the potential for stranded energy.

6.1.5 Toxic Smoke and Gas Emissions (BESS Off-Gassing)

Lithium-ion batteries release flammable and toxic chemicals when subjected to electrical or physical damage, including fire. Chemicals released can also pose an inhalation hazard. During a failure event, a lithium-ion battery may emit tens to hundreds of liters of off-gas, and larger failures may emit thousands of liters of gas. Typical composition of a lithium-ion off-gassing event may include:

High Concentrations (>10%)	▪ Carbon Monoxide ▪ Carbon Dioxide ▪ Hydrogen
Medium Concentrations (1-10%)	▪ Methane ▪ Ethane / Ethanol / Ethylene ▪ Other Hydrocarbons
Low Concentrations (<1000 ppm)	▪ Hydrogen Fluoride ▪ Hydrogen Chloride ▪ Hydrogen Cyanide ▪ Benzene, Toluene

Figure 12: By-products of Off-Gassing

(Note: Care shall be taken to differentiate between smoke and off-gas, if unknown it shall be treated as off-gas due to the quantities of hydrogen and carbon-monoxide likely to be present.)

DANGER: Toxic Gases	
	Large quantities of toxic smoke and gas may be emitted from the ESS during battery off-gassing or fire situations. <u>Proper PPE including SCBA should be worn by first responders.</u>

NOTICE	
	Typical composition of battery off-gassing event may include: ▪ High concentrations (>10%) of Hydrogen, Carbon Monoxide, Carbon Dioxide ▪ Lower concentration (<10%) of Methane, Ethane, or other flammable hydrocarbons

6.2 Electrical Hazards

Electrical hazards may also be present from associated electrical equipment such as those listed below. **All BESS systems and related electrical equipment shall always be treated as energized (Energetic Hazardous Material), even following an incident.**

- **On-site Electrical Equipment** – All BESS electrical equipment, including batteries shall always be treated as energized. A BESS does not have a single point of disconnect to electrically isolate all components from each other. There are disconnects that will de-energize select parts of the system, but the batteries themselves will remain energized.
- **Overhead Power Lines** – Overhead power lines shall always be treated as energized. Associated hazards include electric shock, arc flash, and fire.

6.3 Additional Hazards and Considerations

For additional hazards associated with leaked coolant, leaked refrigerant, leaked electrolyte, or emergency considerations during storage, operation, transportation, or first aid measures, and disposal procedures, please see product Safety Data Sheets.

6.4 Site Specific Hazards

TBD

DANGER: Risk of Stranded Energy	
	Always treat the batteries as Energetic Hazardous Materials, as stranded energy is likely to remain present. Traditional Fire Department overhaul should not be conducted due to the potential for stranded energy.

7 Emergency Response Considerations

7.1 Emergency Contacts

A list of emergency contacts associated with this installation is provided on Page 4.

7.2 Equipment and Personal Protective Equipment (PPE)

Full firefighter protective gear shall be worn in any response to a fire and/or explosion event or any indication a fire may be present, or likely to be present at any time during the event. This shall include proper use of Self-Contained Breathing Apparatus (SCBA).

If no risk of fire or explosion is present, Arc-rated (AR) protective clothing to protect against arc flash and shock shall be worn. Jewelry such as necklaces shall be removed to avoid contact with any electrical hazard.

Proper PPE shall include the use of Self-Contained Breathing Apparatus (SCBA).

PPE CATEGORY 1	PPE CATEGORY 2	PPE CATEGORY 3	PPE CATEGORY 4
Minimum Arc Rating of 4 cal/cm² Arc Rated Clothing: • AR long-sleeve shirt and pants, or AR coverall • AR face shield, or AR flash suit hood • AR jacket, parka, rainwear, or hard hat liner (as needed) Protective Equipment: • Hard hat • Safety glasses or safety goggles • Hearing protection (with inserts) • Heavy duty leather gloves • Leather footwear (as needed)	Minimum Arc Rating of 8 cal/cm² Arc Rated Clothing: • AR long-sleeve shirt and pants, or AR coverall • AR flash suit hood, or AR face shield and AR balaclava • AR jacket, parka, rainwear, or hard hat liner (as needed) Protective Equipment: • Hard hat • Safety glasses or safety goggles • Hearing protection (with inserts) • Heavy duty leather gloves • Leather footwear	Minimum Arc Rating of 25 cal/cm² Arc Rated Clothing: • As required: AR long-sleeve shirt, AR pants, AR coverall, AR flash suit jacket, and/or AR flash suit pants • AR flash suit hood • AR gloves • AR jacket, parka, rainwear, or hard hat liner (as needed) Protective Equipment: • Hard hat • Safety glasses or safety goggles • Hearing protection (with inserts) • Leather footwear (as needed)	Minimum Arc Rating of 40 cal/cm² Arc Rated Clothing: • As required: AR long-sleeve shirt, AR pants, AR coverall, AR flash suit jacket, and/or AR flash suit pants • AR flash suit hood • AR gloves • AR jacket, parka, rainwear, or hard hat liner (as needed) Protective Equipment: • Hard hat • Safety glasses or safety goggles • Hearing protection (with inserts) • Leather footwear (as needed)

Figure 13: Required Arc Resistant (AR) Clothing

**** First Responder turn-out gear DOES NOT provide any type of AR protection.**

DANGER: Risk of Explosion / Deflagration



An explosion / deflagration / over-pressure event is a critical hazard, and any emergency on-site should always be addressed with full awareness of potential factors which may lead to such an event.

Any failure or alarm condition should result in the assumption of an explosion risk.

DANGER: Toxic Gases



Large quantities of toxic smoke and gas may be emitted from the ESS during battery off-gassing or fire situations.

Proper PPE including SCBA should be worn by first responders.

7.3 General Emergency Response Recommendations

Initiation of emergency response shall be activated per current protocol.

General Emergency Response Recommendations:

- 1. If there is any threat or potential threat to life or safety, 911 shall be called immediately to summon the aid of public safety responders.**
- 2. An initial scene assessment shall be conducted from all sides (360-degree scene size-up) if possible, and a clear concise assessment shall be given to incoming responders. Hazards and facility safety concerns such as high voltage areas or other electrical concerns shall be announced to all responders. The scene assessment shall include the following in plain language (no code or terms):**
 - Where the incident is located
 - What has happened
 - What is occurring
 - Any injuries or unaccounted for individuals
 - What needs or other resources should be requested
- 3. An Incident Command System (ICS) shall be established immediately and shall include designation of roles.** The primary command post location shall be located at the Fire Department Staging Area, or other designated area at the front of the site. If Public Safety is summoned to the incident, the ICS shall be a Unified Incident Command System (UICS).
- 4. On-site staff (if applicable) shall immediately go to a designated muster point,** which will be the command post location unless designated differently by the Incident Commander.
- 5. Incident Command shall designate the individual in charge of accountability.** Accountability shall be reported as soon as possible. If available, another individual shall control any traffic and guide first responders to the scene.

Note: At the same time as these activities are occurring, the System Owner / Operator or other designated SME shall immediately contact the C4 Control Center to establish available data from the BMS and

communicate this to the Incident Commander or other appropriate individual.

It is recommended that a safety perimeter is set up and maintained around the site to keep any persons or personnel a safe distance from the incident.

DANGER: Risk of Explosion / Deflagration



An explosion / deflagration / over-pressure event is a critical hazard, and any emergency on-site should always be addressed with full awareness of potential factors which may lead to such an event.

Any failure or alarm condition should result in the assumption of an explosion risk.

Danger: Toxic Gases



Large quantities of toxic smoke and gas may be emitted from the ESS during battery off-gassing or fire situations.

Proper PPE including SCBA should be worn by first responders.

8 Determine Incident Actions

8.1 Unified Command/Collaboration with Subject Matter Expert (SME)

During an incident at the facility where Public Safety response is summoned, Cypress Creek Renewables shall make the Subject Matter Expert (SME) available for the duration of the event. The SME's responsibility is to serve as a liaison between public safety and the facility. The SME shall understand the facility operation in detail, public safety terminology, communication, and the incident command structure; shall have an in-depth knowledge of the site-specific emergency response plan and overall understanding of response to energy storage facility incidents; shall assist in alarming, telemetry, shut-down procedures, and site-specific hazards.

8.2 Determine Incident Actions

8.2.1 Managing the Incident

Unless there is an immediate threat to life safety or similar threat, a defensive operation shall be considered.

8.2.2 Defensive Operation

Caution should be exercised if water is applied directly to the outside of a BESS enclosure that is burning on the inside. The general approach for this application is to apply water to adjacent exposures, as necessary, in a defensive manner, rather than aggressively attacking the fire in the burning unit. The telemetry of adjacent enclosures shall be closely monitored during this operation. Water penetration on enclosures is not expected to have direct access to the batteries, and as such, this will not stop the thermal runaway event and may only delay the eventual combustion of the entire BESS product. Manage the fire incident utilizing the reach of the hose stream to protect exposures and control the off-gassing and smoke from the enclosure.

Entering a fenced area, other than for life safety, is only to be considered after consultation with the SME/C4. Substantial electrical power may remain at the batteries and to the inverters and at the coupled transformers even after the high voltage feeder lines have been isolated from feeding the enclosures. Firefighting operations should be limited to hose and master stream application from outside the designated boundary as far back as hose and stream ranges will allow, considering the location of inverters. In all instances, power shut down and isolation involving the high voltage feeder lines needs to be confirmed before any defensive measures are taken involving application of water to the site.

**** Lock-out/Tag-out Procedures shall be followed by all parties and confirmed by all parties.**

8.2.3 Safety Perimeter & Stand-off Distances

A **safe stand-off distance of 100'** (30.5 meters) shall be maintained between individuals and the BESS enclosure exhibiting fire conditions. Staging of personnel and equipment shall be on the angles (Figure 11) of the BESS enclosure, to stay out of the potential blast radius of any doors or other potential projectiles. Attempt to extinguish the fire only if imminent threat to life safety exists.

Establish a **safety perimeter of 125'** (45.75 meters) for non-emergency personnel around all sides of the BESS and remain outside the fenced area. Do not allow personnel other than firefighters in proper PPE to enter the safety perimeter. (Note: The Safety Perimeter may extend beyond the boundary of the fenced area. Stay upwind out of smoke and off-gassing.)

CAUTION



Unless there is an immediate threat to life safety or similar threat, manage the incident utilizing the reach of the hose stream.

8.3 Incident Response

When sensors within the BESS enclosures (e.g., BMS) detect conditions that indicate a fire, an alarm will be sent to the C4. Additionally, an audible alarm and visual strobe will flash on the enclosure exterior.

** The rate of fire growth can vary in nature and can change suddenly.

If there is no immediate threat to life safety:

1. Allow the BESS to burn in a controlled fashion until the fire self-extinguishes.
2. A defensive approach should be considered utilizing water to cool and protect adjacent exposures and mitigate the spread of fire to areas outside of the fenced installation. Remove or protect adjacent vegetation through routine maintenance program to avoid providing an additional fuel source which may aid the spread of fire. Manage the fire incident utilizing the reach of the hose stream to protect exposures and control the off-gassing and smoke from the enclosure.
3. Remember that even after the BESS is isolated from the electric grid there will still be considerable stored energy in the batteries that poses a potential electric shock hazard to anyone in the nearby vicinity.

Warning: The risk of battery re-ignition remains present for hours or even days after the smoke/flame was initially detected. Even if a lithium-ion battery fire has been extinguished, there is still a risk of re-ignition.

Chemicals released during a fire or explosion will be in a gaseous form and primarily pose an inhalation hazard. A fog pattern from a handline or monitor nozzle may be an effective way to control the off-gassing event on the exterior of the battery enclosure from migrating to unwanted areas. However, if water is used in extinguishing flames, these gases can become acids which may cause skin irritation.

Water curtains or hose streams may be applied to adjacent exposures for cooling purposes. If any indicators are present of damage or heat to an adjacent system, the BMS data shall be closely monitored for the adjacent system and relayed to the appropriate individual within the Incident Command System.

8.3.1.1 Fire Watch

Following partial or complete consumption of the system by fire, batteries may continue to emit low levels of flammable gases and dangerous levels of toxic gases for an extended period of time. Continuous monitoring of gas levels in and around the incident location is recommended to be conducted and use of mechanical ventilation may be utilized to manage gas levels. Full firefighter PPE and SCBA shall be utilized until gas levels are confirmed to be at a safe level. A Cypress Creek Renewables assigned Firewatch shall be performed for a minimum of 24 hours after any thermal event or any indication of a thermal event. Fire watch personnel shall be appropriately trained for the task.

Fire watch personnel shall have the following:

- Thermal Camera
- Calibrated gas detection equipment
- Proper PPE for the greatest hazard (thermal vs arc flash)
- Communication equipment
- Appropriate fire suppression equipment is required for the incident.

Any fire incident in which the Fire Department did not respond shall be reported to the Fire Department in a timely fashion for notification purposes.

DANGER: Risk of Explosion / Deflagration	
	An explosion / deflagration / over-pressure event is a critical hazard, and any emergency on-site should always be addressed with full awareness of potential factors which may lead to such an event. <u>Any failure or alarm condition should result in the assumption of an explosion risk.</u>

DANGER: Risk of Stranded Energy	
	Always treat the batteries as Energetic Hazardous Materials, as stranded energy is likely to remain present. Traditional Fire Department overhaul should not be conducted due to the potential for stranded energy.

8.3.2 Explosion/Deflagration

A safe stand-off distance (100') shall be maintained between individuals and the BESS cabinet exhibiting fire conditions or the potential for fire and/or off-gas conditions to exist. Personnel shall be in proper PPE including donned SCBA. Staging of personnel and equipment shall be on the 45° angles off of the corner of the BESS enclosure, to stay out of the potential blast radius of any doors or other potential projectiles. Attempt to extinguish the fire only if imminent threat to life safety exists.

Lithium batteries may off-gas when heated or when subjected to electrical or physical damage. These gases can accumulate inside the battery enclosure at levels above the Lower Explosive Limit (LEL). At sufficiently high accumulations, gases can exceed their Upper Explosive Limit (UEL). Ventilation may bring the environment back into flammability limits and create a new explosion risk.

DANGER: Risk of Explosion / Deflagration	
	An explosion / deflagration / over-pressure event is a critical hazard, and any emergency on-site should always be addressed with full awareness of potential factors which may lead to such an event. <u>Any failure or alarm condition should result in the assumption of an explosion risk.</u>

8.3.3 Electric Shock

Even though a battery may look to be destroyed by fire and/or other means, there is great potential that the battery still has stranded energy and remains energized. De-energization of the system or any removal of the battery or battery component shall only be performed by trained and qualified individuals with proper PPE, and under the direction of the SME.

Overhaul of the BESS enclosure shall not be attempted by the fire department in any circumstances, as there are considerations for handling damaged batteries requiring equipment and expertise not readily available. Once the scene is secured, these actions may be undertaken by trained, qualified, and competent individuals under the direction of the SME.

8.3.4 Arc Flash

BESS systems and related electrical equipment shall be treated as energized Energetic Hazardous Material.

Proper PPE and training are required when working or accessing equipment within an Arc Flash Boundary. When in direct proximity of the battery enclosure, wear the proper PPE for the greatest hazard. Maintain the arc flash boundary until the completion of the task being performed.

The arc flash boundary for batteries at 100% SOC is (To be confirmed and shall be set to the greatest boundary for the site)

8.3.5 Chemical Release

The BESS site perimeter should not be entered during a fire or off-gassing event unless there is an imminent threat to life safety. This entry shall be with full firefighter protective gear to include self-contained breathing apparatus (SCBA). Entry in this situation shall be at the sole discretion of the Incident Commander (IC).

Chemicals consumed during a thermal runaway event will produce copious amounts of smoke. However, if water is used in extinguishing flames, these gases can become acids which may cause skin irritation.

DANGER: Toxic Gases



Large quantities of toxic smoke and gas may be emitted from the ESS during battery off-gassing or fire situations.

Proper PPE including SCBA should be worn by first responders.

8.3.6 Drainage and Water Run-off

If necessary, consideration should be given to mats, pigs, barriers, temporary diking, and damming.

Appendix A – Safety Data Sheets (SDS)

Batteries



宁德时代新能源科技股份有限公司

Contemporary Amperex Technology Co., Limited

No.2 Xingang Road, Zhangwan Town, Jiaocheng Distric, Ningde City, Fujian Province, P.R of China, 352100

中国福建省宁德市蕉城区漳湾镇新港路2号 352100

Tel: +86-593-2582114 Fax: +86-593-2583667

MATERIAL SAFETY DATA SHEET

Issue: 2020-A

Doc No.: 2020-A-105

Issue Date: 6/5/2020

1. Product & Company Identification

Product Description	Lithium Ion Cell (Rechargeable type)	CATL Model Name:	001CB2W0
Manufacturer	Contemporary Amperex Technology Co., Limited	Approximate Weight:	5.36 Kg
Capacity	280 Ah	Equivalent lithium content	84 g
Nominal voltage	3.2 V	Watt-hour	896Wh
UN No.	UN3480	Proper Shipping Name	Lithium Ion Battery
Address	No.2 Xingang Road, Zhangwan Town, Jiaocheng Distric, Ningde City, Fujian Province, P.R of China		
Telephone:	86-593-2583668	Fax	+86-593-2583667

2. Hazardous Identification

2.1 CAS-No/EINECS NO.:N/A

INCI CTFA-Description: Lithium ion polymer rechargeable battery series.

2.2 The product is classified and labeled according to Regulation (EC) No 1272/2008

• Hazard pictograms



GHS05 GHS07 GHS08

Signal word: Danger

• Hazard statements

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

• Precautionary statements

P101 If medical advice is needed, have product container or label at hand.

P102 Keep out of reach of children.

P103 Read label before use.

P260 Do not breathe dust/fume/gas/mist/vapors/spray.



宁德时代新能源科技股份有限公司

Contemporary Amperex Technology Co., Limited

No.2 Xingang Road, Zhangwan Town, Jiaocheng District, Ningde City, Fujian Province, P.R of China, 352100

中国福建省宁德市蕉城区漳湾镇新港路 2 号 352100

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MATERIAL SAFETY DATA SHEET

Issue: 2020-A

Doc No.: 2020-A-105

Issue Date: 6/5/2020

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER/doctor.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards:

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable

3. Composition /Information on Ingredients

Important note: The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

MATERIAL OR INGREDIENT	PEL (OSHA)	TLV (ACGIH)	%/wt.
Graphite	CAS# 7782-42-5 EC#231-955-3	None established	7-25
Lithium iron Phosphate	CAS# 15365-14-7 EC# 476-700-9	None established	15-40
Hexafluoropropylene-vinylidene fluoride Copolymer	CAS# 9011-17-0 EC# 618-470-6	 Hazardous, H411	3-15
Lithium Hexafluorophosphate	CAS# 21324-40-3 EC#235-362-0	Acute Tox. 3, H311;  Skin Corr. 1B, H314;  Acute Tox. 4, H302	0-5
Acetylene Black	CAS# 1333-86-4 EC#215-609-9	None established	0-2



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Diethyl Carbonate	CAS# 105-58-8 EC#203-311-1	Flam. Liq. 3, H226	0-15
Dimethyl Carbonate	CAS# 616-38-6 EC# 210-478-4	Inflammable, H225	0-15
Ethyl Methyl Carbonate	CAS# 623-53-0 EC# 433-480-9	Inflammable, H225	0-15
Propylene Carbonate	CAS# 108-32-7 EC#203-572-1	Eye Irrit. 2, H319	0-15
Ethylene Carbonate	CAS# 96-49-1 EC#202-510-0	Eye Irrit. 2, H319	0-15

4. First Aid Measures

Under normal conditions of use, the battery is hermetically sealed.

Ingestion: Swallowing a battery can be harmful

Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract. If battery or open battery is ingested, do not induce vomiting or give food or drink. Seek medical attention immediately.

Inhalation: Contents of an open battery can cause respiratory irritation. Inhalation of vapors may cause irritation of the upper respiratory tract and lungs. Provide fresh air and seek medical attention.

Skin Absorption: Ethylene carbonate, diethyl carbonate and dimethyl carbonate may be absorbed through the skin causing localized inflammation.

Skin Contact: Contents of an open battery can cause skin irritation and/or chemical burns. Remove contaminated clothing and wash skin with soap and water. If a chemical burn occurs or if irritation persists, seek medical attention.

Eye Contact: Contents of an open battery can cause severe irritation and chemical burns. Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

5. Fire Fighting Measures



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5.1 Hazard Analysis (electrical shock, fire, explode, population)

There was no electrical shock Hazard for single cell, or battery module which voltage was less than 50V DC (the safety voltage). But if the pack had the voltage was bigger than 50V DC, the electrical shock shall be protected.

During the shipment or testing process for LIB Pack or Module, there was danger factors like drop, crush, broken, metal short circuit, liquid immersion, the factors would lead the Hazard like electrical shock, catch fire. If pack was in well sealed box, there was gas exploding Hazard; if the pack was in big room or fans, there was not explode Hazard. The released liquid was the environment population Hazard.

5.2 Material prepare & people training

- 1) **Water based sprayer fire extinguish:** 1 set of 9L or 2 sets of 6L water spray fire extinguishers per each 500KWh LIB pack or Modules. The water based spray fire extinguisher could be used for fire type ABCE = solid (A), flash point >60°C liquid (B), gas (C), <36Kv electrical (E) fire.
- 2) **Water protection sets:** raincoat, galoshes, and rubber gloves. Plastic rollers. Rags.
- 3) **PPE:** breathing mask, safety glass, face mask, gloves for high temperature.
- 4) **Smoke escape:** fans in wall one per 20m or portable fans in rooms. Keep gas exchange hole in trucks.
- 5) **Gases explode tools:** open condition for devices & rooms. Some devices like high or low temperature ovens must be sealed; there was one copper film with the diameter 200mm & thickness 8um as the safety vent. The wall should have one fan per 20m, $\geq 5000\text{m}^3$ per hour for flow rate.
- 6) **Neutralized material:** prepare 10kg $\text{Ca}(\text{OH})_2$ powder per 500KWh LIB pack or modules, it was used for neutralized for release electrolyte. Because electrolyte met with water, 8% HF would be created.
- 7) **Voltage measure.** Multimeter. Please physical block the current measure function, the mistake would lead instrument exploding.
- 8) **People training:** (a) turn on fans or portable fans for smoke escape. (b) Wear the water protection sets → use water spray fire extinguishers → dry by cloths with rubber gloves → insulated by plastic film. (c) Neutralized by $\text{Ca}(\text{OH})_2$ or NaOH for released electrolyte. (d) Use multimeter to measure voltage. Take care of the mistake.

5.3 Fire Extinguisher Flow Chart

- 1) Alarm if you found the smoking or burning.

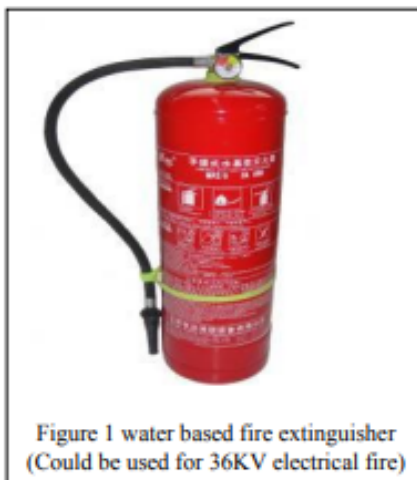
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- 2) Wear PPE. (Breath mask, face mask. If using water, PPE should include the raincoat, galoshes, and rubber gloves).
- 3) Turn Off power supply in devices or power supply.
- 4) Use any fire extinguishers for solid material fire, the recommended sequence was water or mist water, sand, fire extinguisher blanket, CO₂, powder.
- 5) Smoke Escape by turn on fans or open air environment.
- 6) Dry and neutralize. Drying by fans, Neutralization by Ca(OH)₂ powder if water was used.



6. Accidental Release Measures

On hand: Place material into suitable containers and call local fire/police department.

In water: Low electrical shock Hazard when EV or battery/pack in water, GM also shared the information. But H₂ gas was released by the electrolyzed water, you should keep good air flow to avoid the H₂ gas accumulated to prevent hydrogen explosion in enclosed space. If possible, remove from water and call local fire/police department.

7. Handling & Storage

One of the major Hazards associated with the transport of batteries and battery-powered equipment is short-circuit of the battery as a result of the battery terminals coming into contact with other batteries, metal objects, or conductive surfaces. Packaged batteries or cells must be separated in



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a way to prevent short circuits and damage to terminals. They must be packed in a strong outer packaging or be contained in equipment.

Handling: Do not expose the battery to excessive physical shock or vibration. Short-circuiting should be avoided; however, accidental short-circuiting for a few seconds will not seriously affect the battery. Prolonged short circuits will cause the battery to rapidly lose energy, could generate enough heat to burn skin. Sources of short circuits include jumbled batteries in bulk containers, coins, metal jewelry, metal covered tables, or metal belts used for assembly of batteries in devices. To minimize Hazard of short-circuiting, the protective case supplied with the battery should be used to cover the terminals when transporting or storing the battery. Do not disassemble or deform the battery. Should an individual cell within a battery become ruptured, do not allow contact with water. When operators handle the battery which voltage more than 50v, they must wear the insulation protection PPE.

Storage: The lithium ion battery should be between 25% and 75% of full charge when stored for a long period of time. Stored in a cool, dry, and well ventilated area. Elevated temperatures can result in loss of battery performance, leakage, or rust. Do not expose the battery to open flames.

8. Exposure Control/Personal Protection

Engineering Control: Keep away from heat and open flame. Stored in a cool dry place.

Personal Protection:

Respiratory Protection: Not necessary under normal conditions.

Eye/Face Protection: Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.

Gloves: Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery.

Foot Protection: Steel toed shoes recommended for large container handling.

9. Physical/Chemical Properties

Physical state	Solid	Solubility in water:	Not Applicable
Color	White	Vapor pressure	Not Applicable
Odor	No Odor	Explosion limit	Not Applicable
Flash point	Not Applicable	Auto flammability	Not Applicable
Solubility in ethanol soluble	Not Applicable	Melting Point	Not Applicable



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Boiling Point	Not Applicable	Freezing Point	Not Applicable
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10. Stability & Reactivity

Stability: Product is stable under conditions described in Section 7.

Conditions to Avoid: Heat above 70 °C or incinerate. Deform. Mutilate. Crush. Disassemble. Overcharge. Short circuit. Expose over a long period to humid conditions.

Materials to avoid: Oxidising agents, alkalis, water.

Hazardous Decomposition Products: Toxic Fumes, and may form peroxides.

Hazardous Polymerization: N/A.

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, halogenated hydrocarbons.

11. Toxicological information

Signs & symptoms: None, unless battery ruptures.

In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.

Inhalation: Lung irritant.

Skin contact: Skin irritant.

Eye contact: Eye irritant

Ingestion: Poisoning if swallowed..

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to server irritation, burning and dryness of the skin may occur, Target organs nerves, liver and kidneys.

12. Ecological information

Mammalian effects: None known at present.

Eco-toxicity: None known at present.

Bioaccumulation potential: Slowly Bio-degradable.

Environmental fate: None known environmental hazards at present.



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13. Disposal considerations

Do not incinerate, or subject cells to temperature in excess of 70°C. Such abuse can result in loss of seal leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.

14. Transport Information

14.1 The requirement of air transportation

The lithium battery should accord with the International Air Transport Association (IATA DGR 61 edition) requirements for transportation. The battery or cell should be packed and signed as following table. (If the cell's power less than 20Wh or battery's power less than 100Wh and the package according with PI-965 Section II, it is not classified as dangerous cargo).



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UN NO.	Proper Shipping Name	Power	Package requirements	Label which need to paste
UN3480	lithium ion batteries	Cell > 20Wh Battery > 100Wh	PI965 Section IA Limit per package: Pax A/C = Forbidden CAO = 35 kg	Class 9 hazard label 
		Cell ≤ 20Wh Battery ≤ 100Wh	PI965 Section IB NOTE: Use "IB" if package exceeds Section II Limits or more than 1 package Limit per package: Pax A/C = Forbidden CAO = 10 kg Gross	Class 9 hazard label and lithium battery handling label  
		Cell ≤ 20Wh Battery ≤ 100Wh	PI965 Section II (no more than 1 package) Limit per package: ≤ 2.7 Wh = 2.5kg; or cells > 2.7 Wh ≤ 20 Wh = 8 cells; or batteries > 2.7 Wh ≤ 100 Wh = 2 batteries Pax A/C = Forbidden	lithium battery handling label 
UN3481	lithium ion batteries contained in equipment	Cell > 20Wh Battery > 100Wh	PI967 Section I Limit per package: Pax A/C = 5 kg CAO = 35 kg	Class 9 hazard label 
		Cell ≤ 20Wh Battery ≤ 100Wh	PI967 Section II Limit per package: Pax A/C = 5 kg CAO = 5 kg	lithium battery handling label 
UN3481	lithium ion batteries packed with equipment	Cell > 20Wh Battery > 100Wh	PI966 Section I Limit per package: Pax A/C = 5 kg CAO = 35 kg	Class 9 hazard label 



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		Cell≤20Wh Battery≤100Wh	PI966 Section II Limit per package: Pax A/C = 5 kg CAO = 5 kg	lithium battery handling label 
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Cells and/or batteries at a SOC of greater than 30% of their rated capacity may only be shipped with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

Packages prepared according to Section II of PI965 must be offered to the operator separately from other cargo and must not be loaded into a unit load device before being offered to the operator.

The lithium core and battery goods required by the packaging specification PI965 and PI968 II shall not be packed in the same outer package as other dangerous goods.

Ban lithium ion battery (UN 3480, PI965 Section IA or IB) and Aggregate Lithium Content (3090, UN PI968 Section IA or IB) with category 1 explosive material (except ammunition) 1.4, 2.1 flammable gas, flammable liquid, 4.1 3 flammable solid, 5.1 class antioxidant and other dangerous goods packaging in the same package.

Do not damage or mishandle this package. If package is damaged, batteries must be quarantined, inspected, and repacked. Cells and batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport. Waste lithium batteries and lithium batteries being shipped for recycling or disposal are prohibited from air transport unless approved by the appropriate national authority of the State of origin and the State of the operator.

The lithium battery should pass the UN38.3 test, if the battery can not pass the testing, it can not transport, should redesign. If the batteries through the test, for the lithium battery only, follow the UN3480 and the packing requirements for PI965, for the lithium battery which installed in equipment, follow the UN3481 and the packing requirements for PI967.

The lithium battery testing meets all requirements under UN Manual of Tests and Criteria Part III, subsection 38.3.

No	ITEMS	RESULT	REMARKS
1	Altitude simulation	Pass	Test 1 to 5 must be conducted in sequence on the same cell or battery
2	Thermal test	Pass	
3	Vibration	Pass	
4	Shock	Pass	
5	External short circuit	Pass	
6	Impact	Pass	



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7	Forced Discharge	Pass	Only for Cell
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14.2 The requirement of ocean shipping

According to International Maritime Dangerous Goods Code (IMDG 38th) to transport and according to the requirements of UN NO. 3480/3481 to management the goods, and require class II packaging. Firmly installation. Mutual isolation. Avoid short circuits. If the package contain more than 24 lithium batteries or more than 12 lithium battery packs, must provide the special program if package damage.

The clause 188 of IMDG require the Watt of lithium ion cell less than 20Wh is not classified as dangerous cargo and the Watt of lithium ion battery less than 100Wh is not classified as dangerous cargo but need marked the WHR ratio label. Otherwise, the battery and module should packed in a strong outer packaging or be contained in equipment.

The clause 230 of IMDG 38th requires the lithium battery testing should meets all requirements under UN Manual of Tests and Criteria Part III, subsection 38.3.

15. Regulatory Information

See ACGIH exposure limits information as noted in Section3

US: This MSDS meets/exceeds OSHA requirements.

International: This MSDS conforms to European Union (UN), the International Standards Organization (ISO) and the International Labor Organization (ILO) and as documental in ANSI (American National Standards Institute) Standard Z400.1-1993.

Air transportation: According to Civil aviation industry standard MH/T1020-2018 Lithium Battery Air Transport Standard and IATA DGR and ICAO. The international transport and commodity inspection is used this standard at the moment (IMDG CODE),

Ocean shipping: According to International Maritime Dangerous Goods Code to transport and According to the requirements of UN NO 3480/3481 to management the goods.

Land transportation: According to List of Dangerous Goods(GB12268).

Avoid electrical shock: According to Standard for Electrical Safety in the Workplace, NFPA-70E.

16. Charging and labeling



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Charging: This battery is made to be charged many times. Use an Energizer approved battery charger. Never use a modified or damaged battery charger. A backup charge termination based on time is recommended to prevent overcharging. The charging temperature should be between 0 °C and 45 °C (32 °F and 113 °F). The battery pack will be normally warm during charging.

Charging Voltages and Currents: Charging voltages are prevented from exceeding the specified limits by an internal battery protection circuit. Never use a battery that shows signs of a damaged protection circuit or broken case. (Such damage to the protection circuit may be indicated by voltages at the battery terminals outside of their specified ranges.) Adhere to all specified charging and discharging voltages and currents. Do not use battery if its voltage drops below the specified minimum voltage.

Labeling: If the CATL label or package warnings are not visible, it is important to provide a package and/or device label stating.

If the lithium-ion battery or cell transported by air the labeling according the requirement of IATA 60th, the packages bear the Class 9 hazard label(Figure 3) or/and lithium battery handling label(Figure 4).



Figure 3 Class 9 hazard label



Figure 4 lithium battery handling label

If the lithium-ion battery or cell transported by sea the labeling according to IMDG 38th, the requirement as follow,

- Package, do not any indication.
- Need all the UN No.
- subassembly: Do not any indication.
- Need the *LQ* label.

WARNING: CHARGE ONLY WITH SPECIFIED CHARGERS ACCORDING TO DEVICE MANUFACTURER'S INSTRUCTIONS. DO NOT OPEN BATTERY, DISPOSE OF IN FIRE, OR



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SHORT CIRCUIT - MAY IGNITE, EXPLODE, LEAK, OR GET HOT CAUSING PERSONAL INJURY.

Disposal: Dispose in accordance with all applicable federal, state and local regulations.

The information contained herein is furnished without warranty of any kind. Users should consider this data only as a supplement to other information gathered by them and must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.



【Material Safety Data Sheet】

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Product Name	Sinopec -40℃ Inverter Engine Coolant
Product Code	60506820
Product Usage:	Used as heat transfer medium in inverter
Company Identification	SINOPEC LUBRICANT CO., LTD.
Address	No. 6 Anning Zhuang West Road, Haidian District, Beijing, P.R.China
Post Code	100085
Emergency Response	Phone 86-800-810-9886 Fax 86-10-82410856
Website	http://english.sinolube.com
E-mail	csc.lube@sinopec.com
Effective date	2020-03-01

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

This product is a mixture of additives, water and glycol.

COMPONENTS	CAS NUMBER	AMOUNT
Additive	Mixture	<5%weight
Water	7732-18-5	40-60%weight
Ethylene Glycol	107-21-1	40-60%weight

SECTION 3 HAZARDS IDENTIFICATION

GHS Hazards Type	Non-hazardous
GHS Label Elements	
Sign	No data
Caution Words	No data
Hazard Statement	Physical hazards: According to GHS, it is not classified as hazardous substances. Health hazard: According to GHS, it is not classified as health hazard substances. Environmentally hazard: According to GHS, it is not classified as environmentally hazard substances.
GHS Precautionary Statements	
Precaution	No data
Incident Response	No data
Safe Storage	No data

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-40℃ Inverter Engine Coolant
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Revision Date: March 01, 2020

Disposal	No data
Other Hazards	Not classified as flammable, but will combustible
Main Symptoms and Emergency Overview	Based on animal experiments, found no strong evidence to prove that the product Carcinogenic. Usually this product is no hazardous to health. Might be it stimulate to eyes, skin and respiratory when overexposure.

SECTION 4 FIRST AID MEASURES

General Information	Shouldn't become a health hazard when used under normal condition
The disposal of the Different Contact Manner	
Inhalation	Move exposed person from the contact area to fresh air and provide oxygen, and keep the respiratory tract unobstructed. If breathing is difficult, give oxygen, if breathing stops, carry out artificial respiration immediately and get medical treatment.
Skin	Take off contaminated clothes, wash with a large amount of flowing water, and seek medical advice if necessary.
Eye	Wash eyes with water for 15 minutes. If irritation occurs, get medical attention.
Ingestion	Urge vomiting immediately and receive medical treatment.
Main Symptoms(acute / delayed effect)	No data

SECTION 5 FIRE FIGHTING MEASURES

Special Risk	This product is not hazardous product. It may be to combustion when exposure to high temperature or fire.
Extinguishing Method and media	Foam extinguishers, carbon dioxide extinguishers, dry powder extinguishers, spray extinguishers, etc. Sand is only suitable for small fires.
Combustion Products	Incomplete combustion produces smoke, carbon monoxide, oxides, aldehydes and other decomposition components.
Forbidden Media	Water.
Firefighters Special Protective Equipment	Breathing apparatus must be worn when approaching the ignition point in a confined space.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. Guide to the selection of personal protective equipment, see chapter 8 of the safety data sheet.	
Disposal information, see chapter 13 of safety data sheet. Please comply with all applicable local or national regulations.	
Emergency Response Procedures	Cut off the fire source, contact the operators immediately, and let the irrelevant personnel evacuate to the safety zone and isolate. Cut off the leakage source as much as possible to prevent entering into the sewer, drainage ditch, water body and other spaces. Observe the relevant firefighting procedures, refer to Chapter 8 of the safety technical instructions.
Protective Measures for Operators	In case of leakage, use protective equipment to protect the human body when removing the leakage liquid.
Environmental Protection Measures	No data
Spill Management	Disposal of the waste refer to chapter 13 of the safety data sheet. FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

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FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal

SECTION 7 HANDLING AND STORAGE

Handling

General Preventive Measures	Avoid contact with skin for a long time or repeatedly, and wash thoroughly after contact. If there is a danger of inhaling steam, spray or smoke, please use partial exhaust ventilation. Handle with care to prevent damage to packaging and containers.
Precautions for safety disposal	Operators must be specially trained and strictly abide by the operation specifications. Avoid contact with oxidants. Equip with corresponding quantity of fire-fighting equipment and leakage emergency treatment equipment. Protective shoes shall be worn when loading and unloading 200L barreled products. Empty containers may contain harmful substances.
Storage	Do not store in open or unlabeled containers. Store in a cool, dry place with adequate ventilation. Keep away from open flames and high temperatures. Suggest do not to be stored in the galvanized container.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Allowable Concentration	No data
Engineering Controls	Provide good natural ventilation conditions.
Personal Protective Equipment	Personal protective equipment shall meet the relevant national standards. Specific content consult the supplier of personal protective equipment.
Respiratory Protection	If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, an approved respirator must be worn.
Hand protection	Use protective gloves which are chemically resistant to this material.
Eye protection	Chemical goggles, or safety glasses with side shields.
Personal Protection	Use protective clothing and shoes which are chemically resistant to this material.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Distinctive
Odor	No odor
pH	7.5~11.0
Melting Point	Not Applicable
Pour Point	No data
Boiling Point	109.5℃(typical data)
Flash Point	No data
Explosion Limit	No data
Vapour Pressure	No data
Vapour Density	No data
Density	1076 kg/ m3(typical data)
Solubility	Soluble in water
Octanol/ Water Partition	No data
Coefficient	
Decomposition Temperature	No data
Freezing Point	-41.0℃(typical data)

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SECTION 10 STABILITY AND REACTIVITY

Chemical Stability	Stable (at room temperature)
Incompatibility With Other Materials	Contact with strong oxidant
Conditions to Avoid	Extreme temperature, sunlight exposure, contact with strong oxidant and fire source
Incompatible Materials	Strong oxidant
Hazardous Decomposition	May react with strong oxidizing agents
Product	Hazardous decomposition will not form under normal storage conditions

SECTION 11 TOXICOLOGICAL INFORMATION

Acute Dermal Toxicity	LD ₅₀ /Oral/Mouse:>2000mg/kg Primary skin irritation/Rabbit/OECD 404:No irritation Primary mucous membrane irritation/Rabbit eyes/OECD 405:No irritation
Skin Irritation or Corrosion	Mild irritation
Eye Irritation or Corrosion	Long-term exposure can cause eye irritation
Inhalation Hazards	Mild irritation
Respiratory or Skin	No data
Sensitization	No data
Germ Cell Mutagenicity	No data
Reproductive Toxicity	No data
Specific target Organ	No data
Toxicity—Disposable Contact	No data
Specific target Organ	No data
Toxicity—Disposable Contact—Repeated contact	No data
Additional Information	No data

SECTION 12 ECOLOGICAL INFORMATION

Ecotoxicity	Though long time infiltration, it may produce ecological toxicity
Persistence and Degradability	This product is expected to be inherently biodegradable
Potential Bioaccumulation	This product has the water solubility; but bioavailability and bioaccumulation to aquatic organisms is minimal.
Mobility	When released into the environment, adsorption to sediment and soil will be the predominant behavior.

SECTION 13 DISPOSAL CONSIDERATIONS

Waste Disposal	It should be recycled or recycled as far as possible, or disposed of by an approved recycling facility, or at an appropriate government waste disposal facility.
Disposal of Containers	Uncontaminated container can be recycled.

SINOPEC LUBRICANT CO., LTD.

-40℃ Inverter Engine Coolant
Revision Number: 5

4 of 6

MSDS: 60506820 US
Revision Date: March 01, 2020

Note to Release Containers that cannot be cleaned must be discarded and disposed of by a waste collector approved by relevant laws and regulations.
Please use personal protective equipment. Keep waste away from soil or into drains. Transport means, recycling devices, treatment or storage equipment approved by the authority shall be used for waste turnover or storage.

SECTION 14 TRANSPORT INFORMATION

Land, sea and air transport process, the product is not classified as dangerous goods.

UN Dangerous Goods Code	Not Applicable
UN Shipping Name	Not Applicable
UN Hazard type	Not Applicable
Packing Group	Not Applicable
Marine Pollutant	Not Applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:

1. Immediate (Acute) Health Effects:	NO
2. Delayed (Chronic) Health Effects:	NO
3. Fire Hazard:	NO
4. Sudden Release of Pressure Hazard:	NO
5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1 03=EPCRA 313
01-2A=IARC Group 2A 04=CA Proposition 65
01-2B=IARC Group 2B 05=MARTK
02=NTP Carcinogen 06=NJ RTK
07=PA RTK

No components of this material were found on the regulatory lists above.

Chemical Inventories All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), KECI (Korea), PICCS (Philippines), TSCA (United States).
One or more components does not comply with the following chemical inventory Requirements: ENCS (Japan).
Additional notifications in Canada may be required 90 days prior to use other than as a lubricating oil additive.

NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Motor oil)

WHMIS Classification This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

SECTION 16 OTHER INFORMATION

Revision Date:	March 01,2020
MSDS Version Number	5
Other Information	Other information and manuals can be obtained through the sales department and technical department.
Amendment Statement	The information provided is based on our understanding of the existing data. Desc

SINOPEC LUBRICANT CO., LTD.

-40℃ Inverter Engine Coolant
Revision Number: 5

5 of 6

MSDS: 60506820 US
Revision Date: March 01, 2020

ription of the product solely for the purpose of complying with requirements of the health, safety and environment. We don't provide any guarantee of the specific characteristics of the product.

SINOPEC LUBRICANT CO., LTD.

-40℃ Inverter Engine Coolant
Revision Number: 5

6 of 6

MSDS: 60506820 US
Revision Date: March 01, 2020

Appendix B – Site Signage/Placarding

CAUTION



DO NOT ENTER

CALL 419-566-5175



**LITHIUM – ION
BATTERY ENCLOSED.**

RISK OF FLAMMABLE AND TOXIC GAS

**ESRG HOFFMAN SOLAR + BESS
COORDINATES 12.345678°, -987.654321
NAME OF SYSTEM + MODEL – ELECTROCHEMICAL ESS**



ESRG

ESRG HOFFMAN SOLAR + BESS

**123 South Avenue 14 E
Anytown, OH 42315**

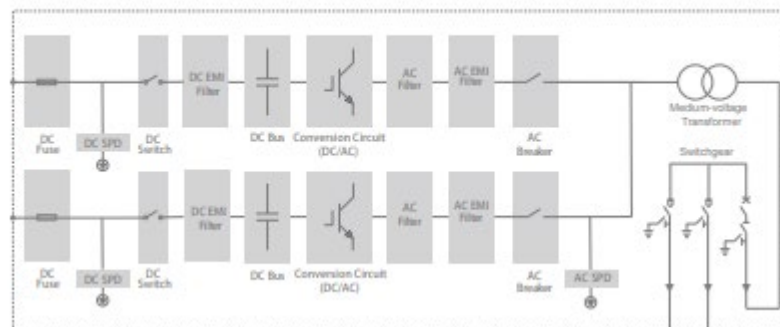
24-HOUR EMERGENCY #419-566-5175

Appendix C – Inverter

The site will also consist of 30 SC4000UD-MV-US inverters. Each inverter will service 2 BESS enclosures.

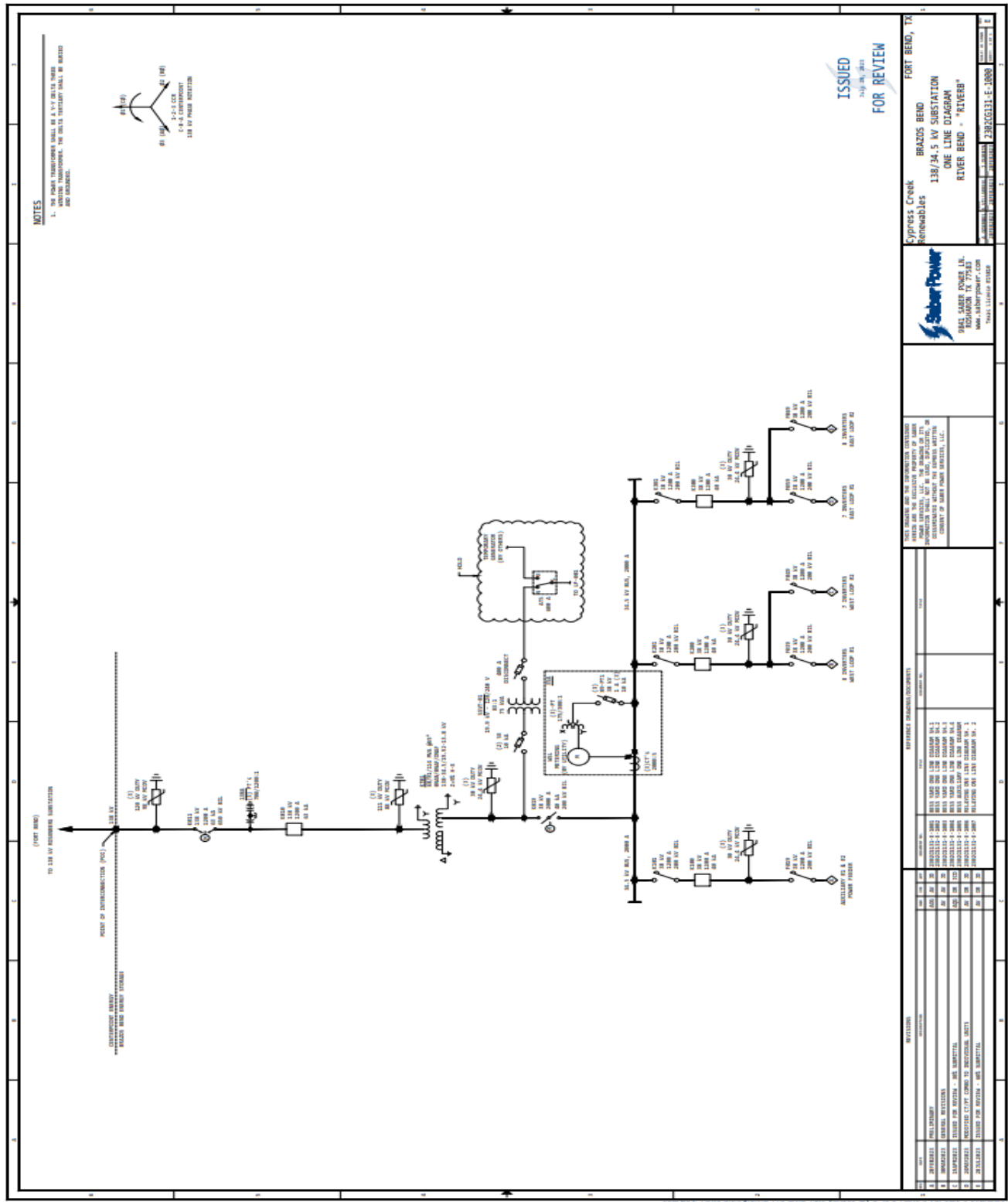


CIRCUIT DIAGRAM



System Type	SC4000UD-MV
DC side	
Max. DC voltage	1500 V
Min. DC voltage	1150 V
DC voltage range	1150 – 1500 V
Max. DC current	2 * 1952 A @ 30 °C
No. of DC inputs	2
AC side (Grid)	
AC output power	4000 kVA @ 45 °C / 4400 kVA @ 30 °C
Max. AC output current	2886 A @ 45 °C / 3174 A @ 30 °C
Nominal AC voltage	800 V
AC voltage range	704 – 880 V
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz
Harmonic (THD)	< 3 % (at nominal power)
Power factor at nominal power / Adjustable power factor	>0.99 / 1 leading – 1 lagging
Adjustable reactive power range	-100 % – 100 %
Feed-in phases / AC connection	3 / 3-PE
AC side (Off-Grid)	
Inverter port nominal AC voltage	800 V
Inverter port AC voltage range	704 – 880 V
AC voltage distortion	< 3 % (Linear load)
DC voltage component	< 0.5 % Un (Linear balance load)
Unbalance load Capacity	100 %
Nominal Voltage frequency / Voltage frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz
Efficiency	
Max. efficiency	99 %
Transformer	
Transformer rated power	4000 kVA
Transformer max. power	4400 kVA
LV / MV voltage	0.8 kV / 35 kV
Transformer vector	Dy11
Transformer cooling type	ONAN
Oil type	Mineral oil (PCB free) or degradable oil on request
Protection	
DC input protection	Load break switch + fuse
Inverter output protection	Circuit breaker
AC output protection	Circuit breaker
Surge protection	DC Type II / AC Type II
Grid monitoring / Ground fault monitoring	Yes / Yes
Insulation monitoring	Yes
Overheat protection	Yes
General Data	
Dimensions (W*H*D)	6058*2896*2438 mm
Weight	18000 kg
Degree of protection	IP65
Operating ambient temperature range	-35 to 60 °C (> 45 °C derating)
Allowable relative humidity range	0 – 100 %
Cooling method	Temperature controlled forced air cooling
Max. operating altitude	1000 m (Standard) / > 1000 m (Optional)
Display	LED, WEB HMI
Communication	R5485, CAN, Ethernet
Compliance	CE, IEC 62477-1, IEC 61000-6-2, IEC61000-6-4
Grid support	L/HVRT, L/HFRT, active & reactive power control and power ramp rate control, Volt-var, Volt-watt, Frequency-watt

Appendix D – Single Line Diagram



Appendix E – Annual Review Log

The following table provides a log of reviews to be conducted on an annual basis for this Emergency Response Plan (ERP).

Date Conducted	System Owner Sign-Off	Notes / Comments



STAFF REPORT TO THE PLANNING AND ZONING COMMISSION

MEETING DATE: MAY 23, 2024

AGENDA ITEM NUMBER: PUBLIC HEARING ITEM III.C.

SUBJECT
PUBLIC HEARINGS

ORIGINATED BY

SUMMARY

RECOMMENDATION

ATTACHMENTS

STAFF REPORT TO THE PLANNING AND ZONING COMMISSION

MEETING DATE: MAY 23, 2024

AGENDA ITEM NUMBER: PUBLIC HEARING ITEM III.C.1.

SUBJECT

PZ CASE #24-09 Conduct a public hearing and consider a request for a zoning change from "I-Industrial District" to "MH-Manufactured Home District" at 716 W Kennedale Parkway, Block 1, Lot 26, of the Woodlea Acres Addition, City of Kennedale, Tarrant County, Texas.

ORIGINATED BY NATHAN GONZALES

SUMMARY

BACKGROUND AND OVERVIEW	
Request	Zoning Change from "I-Industrial District" to "MH-Manufactured Home District"
Applicant	Michael C. Brown for Kennedale MHP LLC
Location	716 W Kennedale Parkway
Surrounding Uses	Industrial and Institutional
Surrounding Zoning	I, CCOD, PD-UV1
Future Land Use Designation	Parks & Open Space, Urban Village
Staff Recommendation	Not Recommended

CURRENT STATUS OF PROPERTY

The subject property is currently zoned I-Industrial District and has operated as the Kennedale Mobile Home Community for quite some time. The front 100 FT of the subject property falls within the Commercial Corridor Overlay District (CCOD). There are 34 existing manufactured homes on-site, with approximately 6 vacant lots where structures once stood. Neighboring properties to the north, south, and west are also zoned I-Industrial. To the east is Fellowship Academy which is zoned Planned Development- Urban Village (PD-UV1). Exhibit A depicts the current zoning of the property in relation to surrounding properties.

Surrounding uses include automotive repair, warehousing, and wholesale/distribution.

According to the city's GIS map, the entirety of the property sits within a 100-year floodplain (See Exhibit B).

The applicant has requested a zoning change from "I-Industrial District" to "MH-Manufactured Home District" to allow for new manufactured homes to be brought in. Due to the current zoning, staff would be unable to approve permits for new manufactured homes as the current use is considered nonconforming and no longer permitted in the district. It should be noted, however, that no permit has been applied for by the applicant though staff has discussed options with the applicant as well as limitations described in the following section.

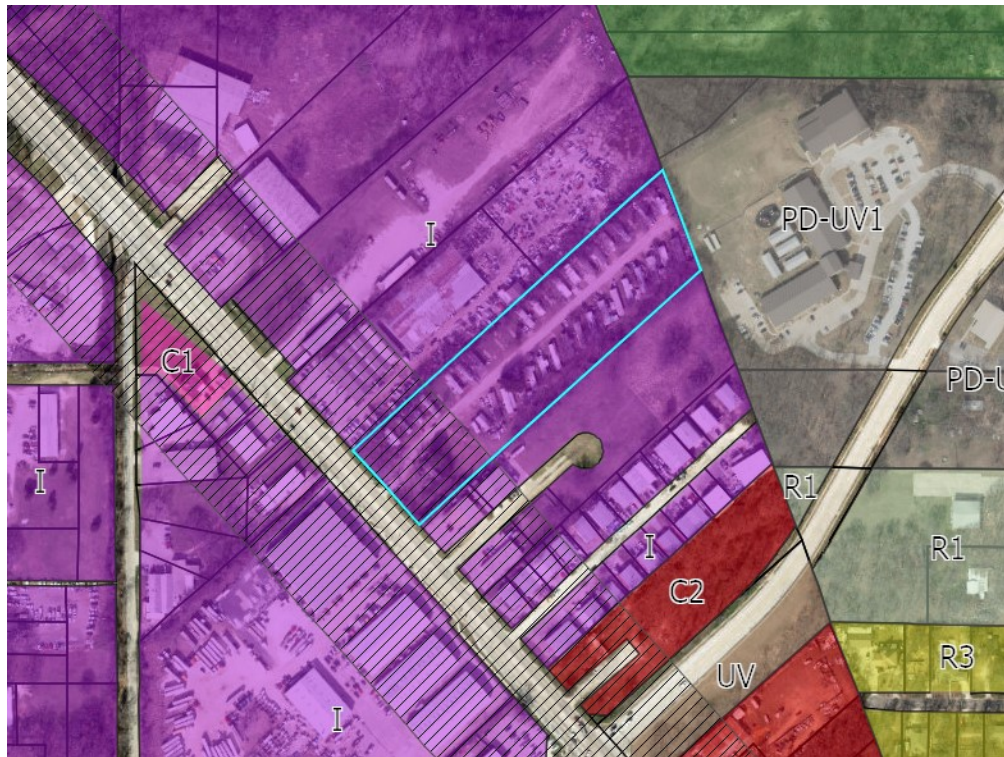


Exhibit A- Current Zoning (Subject Property Outlined in Blue)



Exhibit B- 100 YR Floodplain

ZONING REVIEW

In speaking with the applicant about the history of the property, the applicant believed the property to have been rezoned from Manufactured Homes to Industrial in 2012, citing a land use map contained within the city's 2012 Comprehensive Plan (See page 25). This land use map, however, simply depicted existing land uses within the city and should not be construed as the official zoning map of the city. Staff reviewed city-adopted zoning maps ranging

from the most recent version back to 2008. In each case, the subject property was shown to be zoned Industrial although the color-coded legends have changed over the years. Staff has been unable to locate a specific record of a rezone at the subject property. It is possible, however, that when the city adopted a city-wide zoning map, the rezone occurred as a part of that process. It is staff's position, however, that any prior rezone was done appropriately and consistent with state law and city policy at the time. Staff has included copies of the city's zoning map from 2008-2019 as attachments for your review.

As the land use is considered a nonconforming use, staff reviewed Article 30 Nonconformities of the UDC. Adding new manufactured homes into the property would make the property more nonconforming and in conflict with UDC Section 30.4 (A) which states "A nonconforming use of a building shall not be increased or enlarged and no occupancy of additional buildings or land by a nonconforming use shall be permitted, unless in compliance with this section."

Furthermore, Section 30.4 (B) states, "A nonconforming use of land may not be expanded beyond the area of the land actually being occupied by the use at the time it becomes nonconforming." The existing manufactured homes may remain and be repaired as needed. Staff is unaware of any plans the city may have to discontinue the use or occupancy of existing manufactured homes.

Following a review of Article 30, staff reviewed both the Comprehensive and Future Land Use Plan (FLUP). The FLUP envisions the subject property to become an open park and green space. This is common around Kennedale for areas that fall within floodplains. A small portion of the subject property falls within an Urban Village node, depicted in Exhibit C below:

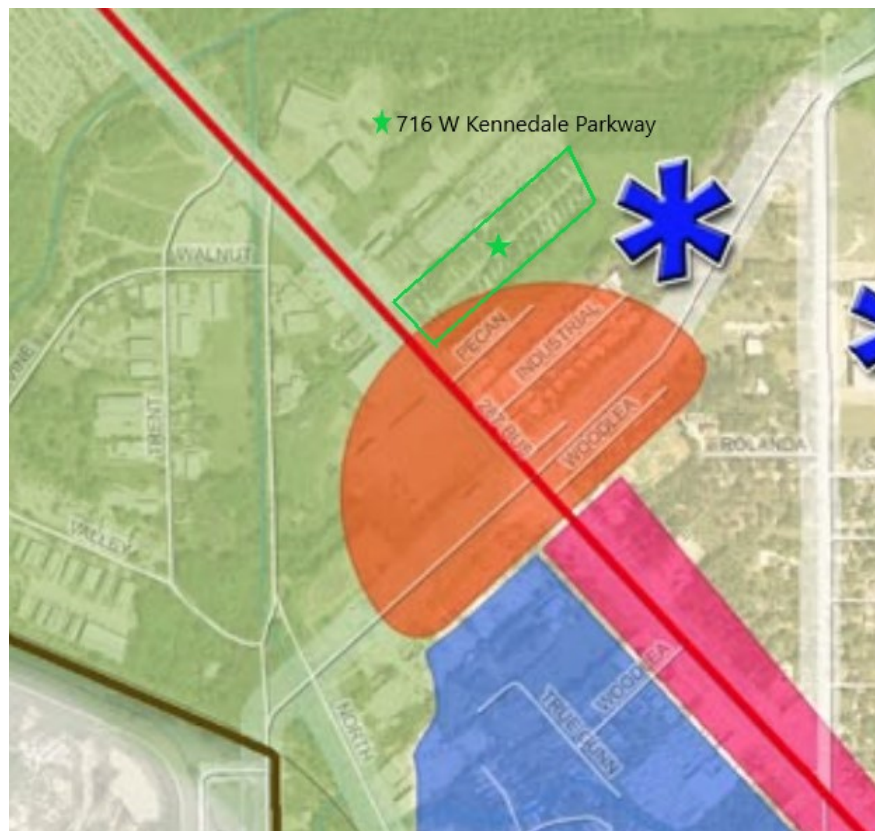


Exhibit C- Future Land Use Plan

The Urban Village (orange node) depicted in Exhibit C envisions future development types such as retail, restaurant, loft apartments, and multi-tenant offices. As the subject property fronts Business 287, it sits off a major thoroughfare and gateway into Kennedale and the only "parkway" identified with the Transportation Plan. The Comprehensive Plan includes recommendations to beautify the parkway given its gateway into the city.

RECOMMENDATION

As the zoning change request is not consistent with the city's adopted plans, staff does not recommend approval of the request.

ATTACHMENTS

1.	716 W Kennedale Pkwy, Zoning Change Application	716 W Kennedale Pkwy, Zoning Change Application.pdf
2.	Star-Telegram Published Notice	Star-Telegram Published Notice.pdf
3.	716 W KENNEDALE PARKWAY SITE POSTING	716 W KENNEDALE PARKWAY SITE POSTING.pdf
4.	716 W KENNEDALE PARKWAY 200 FT MAILING LIST	716 W KENNEDALE PARKWAY 200 FT MAILING LIST.pdf
5.	PZ Case 2409 Mailing Notice	PZ Case 2409 Mailing Notice.docx
6.	Kennedale FLUP	Adopted Future Land Use Plan



APPLICATION ZONING CHANGE

Permit Number _____

Requirements

Please review the following requirements. Your application **will not be accepted** if any of the below items are missing or incomplete.

- ☐ Legal description of property identified by metes and bounds as determined by a registered surveyor
- ☐ Map of the vicinity in which the property is located, and on which the property to be re-zoned is clearly identified by highlighter or by heavy lines
- ☐ Payment of rezoning fee: \$500.00 for properties less than 10 acres and \$1,500.00 for 10 or more acres
- ☐ All materials and application must be received by Planning Department at least 35 days prior to the scheduled Planning and Zoning Commission meeting date

Applicant Information

Applicant Name: Michael C. Brown Kennedale MHP LLC.
 Applicant Title: MANAGER
 Applicant Address: 716 W Kennedale Pkwy #1 Kennedale Tx 76060
 Applicant Phone: (817) 877-6563 Applicant Email: vkennedalemhp@gmail.com

Owner Information (If applicant is not the owner, an affidavit must be submitted by owner)

Owner Name: James Johnson
 Owner Address: 2547 Country Club Ct. Denver Co. 80234
 Owner Phone: 303-647-5161 Owner Email: mhp holdings @ gmail .com

Property Information

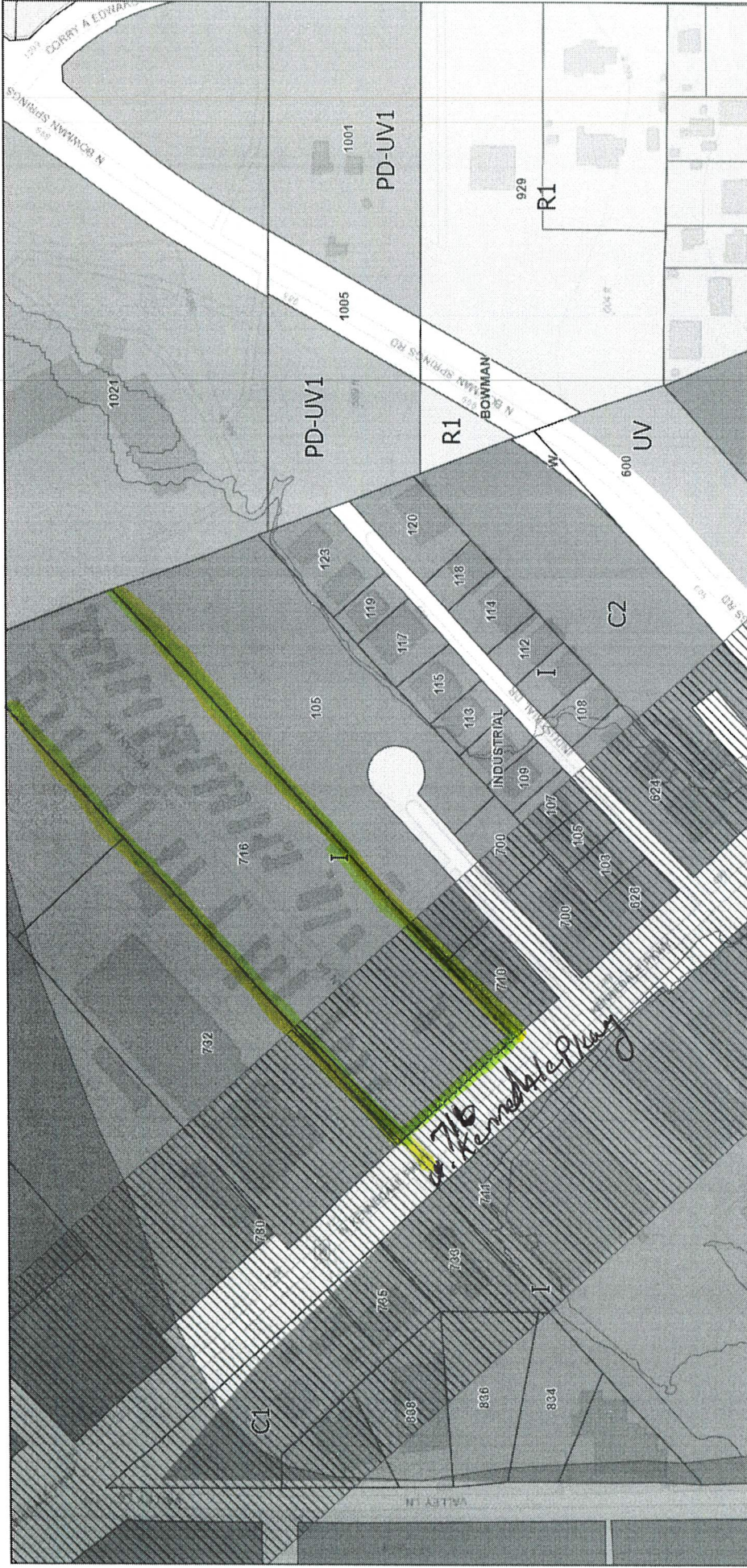
Property Address: 716 W. KENNEDALE Pkwy
 Property Legal Description: LOT 26 Block 1 Woodlea Acres
 Present Use of Property: Mobile Home Park
 Present Zoning of Property: Industrial District
 Desired Zoning of Property: Mobile Home Park

Applicant Agreement

By signing below, I acknowledge that I have read and completed all applicable requirements. I understand that if I have submitted an incomplete application or false/inaccurate information, my application may be rejected and any fees may not be refunded.

Signature of Applicant: Michael C. Brown Date: 4/12/24

ArcGIS Web Map



4/12/2024, 3:42:02 PM

Overlay Districts - Floodplain

- Floodway
- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Overlay Districts - Business 287 and Interstate 20/820 Loop

Zoning (View)

- C1 - Restricted Commercial District
- C2 - General Commercial District
- I - Industrial District
- R1 - Single Family Residential District

R3 - Single Family Residential District

- UV - Urban Village District
- PD-UV1 - Planned Development District - Urban Village
- TAD Parcels
- City Limits

1:2,257

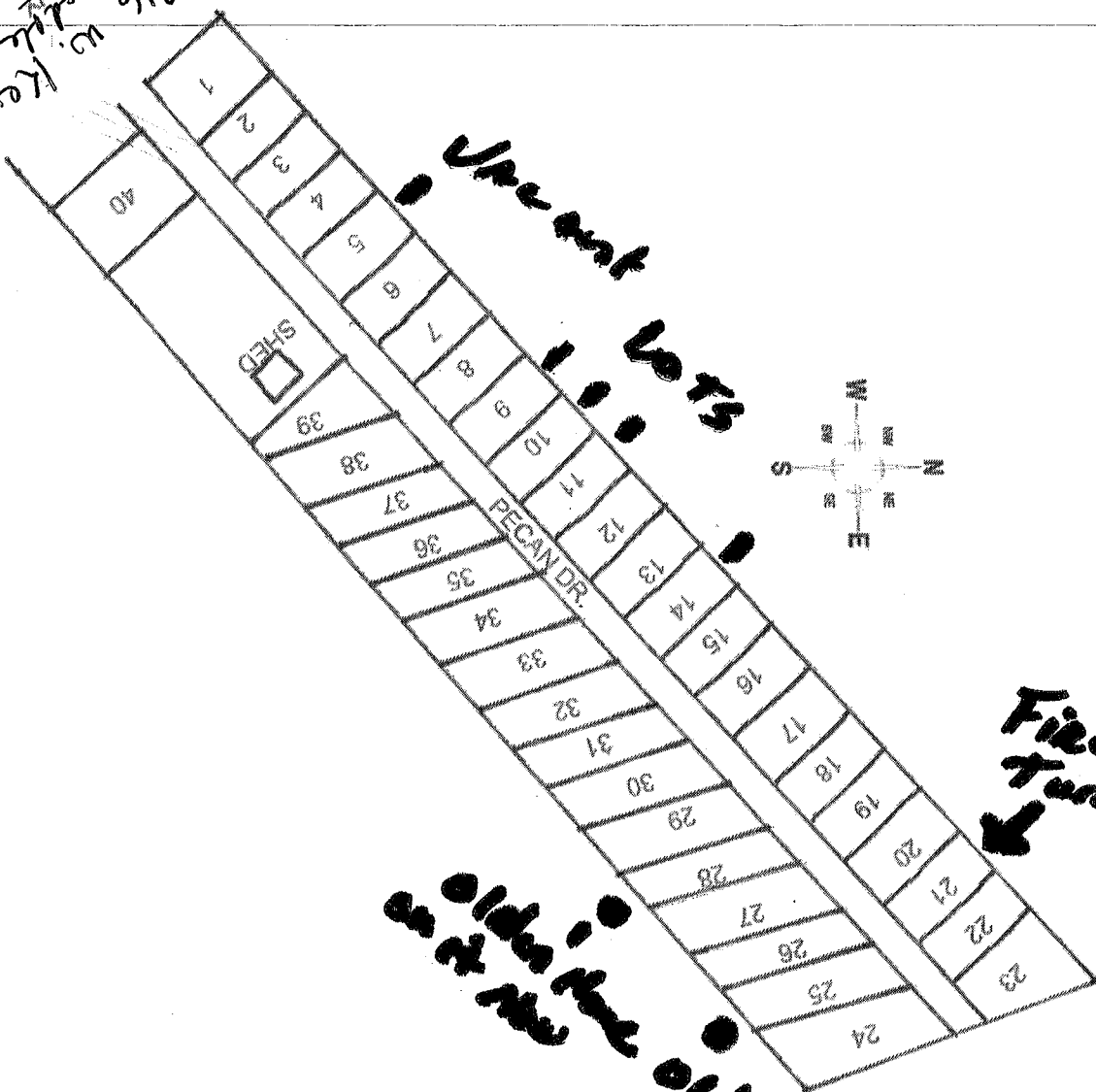
0 0.02 0.04 0.08 mi
0 0.03 0.07 0.13 km

City of Fort Worth, Tarrant County College, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, EPA, USDA

Web AppBuilder for ArcGIS
City of Fort Worth, Tarrant County College, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, EPA, USDA | Tarrant Appraisal District |

*Kennedale m48
716 W. Kennedale Hwy
Kennedale Tx. 76060*

716 W. Kennedy
Kennedy MHP
Kennedy MHP LLC



Unsub
lots

Older
than
the
new
one

Fire Dept
Turn Around



KENNEDALE
Planning Department
www.cityofkennedale.com

CITY OF KENNEDALE
PLANNING & ZONING

OWNER AFFIDAVIT (Only required if applicant is applying on behalf of the owner)

Case # PZ _____

Property Address: 716 W Kennedale Parkway

Legal Description: lot 26 block 1 woodlea acres

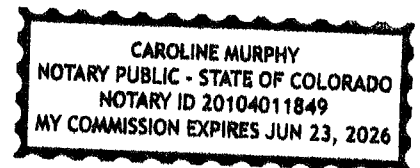
Applicant: Michael Brown for Kennedale MHP LLC

Type of PZ request: _____

I, James Johnson, current owner of above mentioned property, authorize the applicant or his authorized representative to make application for the Kennedale Planning & Zoning Commission to consider granting the above reference request on my behalf and to appear before the Commission.

Owner Signature: [Signature]

Date: 3-28-24



SWORN TO and Subscribed before me by James Johnson

ON THIS 28th DAY OF March, 2024

[Signature]
in Adams County,
Notary Public, ~~Tarrant County, Texas~~
Colorado

Request Zoning Change 716 W.Kennedale Pkwy
Kennedale MHP LLC.

To whom it may concern,

We are A Manufactured Home Community started in the 1950's with a total of 40 lots, of which 6 are vacant. We are currently wanting to buy new homes and have them set up by a Licensed Installer on these vacant lots that already have utility connections. We will be rotating the used homes when available with new homes, to update the aesthetics of the property.

~~The current Zoning is Industrial which does not allow us to bring homes into the Park. According to~~
the City we are no longer a Manufactured Home Community yet we never received any Zoning changes by City to Re-Zone our property which was listed in City map as MHP and pulled permits from city as MHP until 2017.

Re-re-zoning our property would allow us to fill the park with new homes and maintain our status as a manufactured home park and would not negatively effect the current Industrial Zoning of my Neighbors,

We would be happy to discuss any options The Board may suggest in order to Re-Gain MHP status with the City.

Thank you for your time and I look forward to a resolution in this matter.

Michael C. Brown-Managing Partner Kennedale MHP LLC.

Legals

NOTICE TO BIDDERS

Sealed bids received by the City of Arlington at the Office of the Purchasing Manager, 500 E Border Street, 7th Floor, Arlington, Texas, 76010 until 2:00 p.m. on the 13th of June 2024 for: PROJECT NUMBER: 24-0217
Fire Station 8 Re-Build
PRE-PROPOSAL MEETING:
May 21, 2024 at 10AM
Parks Board Room
717 W. Main Street
Arlington, Texas 76013
Official bid or proposal document(s) are available to any supplier registered on the City's Procurement Portal at <https://arlington-tx.ionwave.net/Login.aspx>, or by contacting the office of the Purchasing Manager, Chase Bank Business Office, 500 E Border Street, 7th Floor, P.O. Box 90231, Arlington, Texas 76010. The City of Arlington reserves the right to reject any or all bids and waive any and all informalities.
s/s Jim Ross
Mayor
s/s Alex Busken
City Secretary
IPL0172332
May 8,15 2024

NOTICE TO BIDDERS

Sealed bids received by the City of Arlington at the Office of the Purchasing Manager, 500 E Border Street, 7th Floor, Arlington, Texas, 76010 until 2:00 p.m. on the 6th of June 2024 for: RFP NUMBER: 24-0189
Annual Requirements Contract for Crowd Management and Event Staffing
PRE-PROPOSAL MEETING
May 20, 2024 at 1PM
Esports Stadium
ACC Conference Room
1200 Ballpark Way
Arlington, TX 76011
Official bid or proposal document(s) are available to any supplier registered on the City's Procurement Portal at <https://arlington-tx.ionwave.net/Login.aspx>, or by contacting the office of the Purchasing Manager, Chase Bank Business Office, 500 E Border Street, 7th Floor, P.O. Box 90231, Arlington, Texas 76010. The City of Arlington reserves the right to reject any or all bids and waive any and all informalities.
s/s Jim Ross
Mayor
s/s Alex Busken
City Secretary
IPL0172334
May 8,15 2024

NOTICE TO BIDDERS

Sealed bids received by the City of Arlington at the Office of the Purchasing Manager, 101 S. Mesquite, Suite 800, Arlington, Texas, 76010 until 2:00 p.m. on the 6th of June 2024 for: PROJECT NUMBER: 24-0112
Development of Form-Based Zoning Code in Pilot Area
PRE-PROPOSAL MEETING:
May 20, 2024 at 10AM
Parks Board Room
717 W. Main Street
Arlington, Texas 76013
Official bid or proposal document(s) are available to any supplier registered on the City's Procurement Portal at <https://arlington-tx.ionwave.net/Login.aspx>, or by contacting the office of the Purchasing Manager, Chase Bank Business Office, 500 E Border Street, 7th Floor, P.O. Box 90231, Arlington, Texas 76010. The City of Arlington reserves the right to reject any or all bids and waive any and all informalities.
s/s Jim Ross
Mayor
s/s Alex Busken
City Secretary
IPL0172328
May 8,15 2024

CITY OF ARLINGTON
NOTICE TO BIDDERS

This project primarily consists of 6,300 linear feet of 8-inch to 12-inch PVC water main, 5,200 linear feet of 8-inch to 15-inch PVC sanitary sewer main, 610 linear feet of cured-in-place (CIPP) lining of existing 15-inch sanitary sewer main, and 24,800 square yards of asphalt replacement with misc. concrete replacements. The Engineer's estimate for this project is \$10.4M.
Sealed bids will be received by the City of Arlington, Texas, at the Office of the Director of Water Utilities, 2nd Floor, City Hall, 101 W. Abram Street, Arlington TX, 76010, until 2:00 p.m. on Thursday, May 30th, 2024, for the construction of, WOODLAND PARK (LAKEWOOD TO PARK SPRINGS) WATER AND SANITARY SEWER IMPROVEMENTS PROJECT NO. WUWS22010 as listed in the contract documents, at which time and place they will be publicly opened and read aloud in the Water Utilities Conference Room. Any bid received after closing time will be returned unopened. All bidders and subcontractors on this project must be pre-qualified in the appropriate work category as outlined in the Instructions to Bidders of the contract documents.
Contract documents, including plans, specifications, and addendums may be reviewed and/or downloaded from the City's vendor/supplier portal, IonWave, accessible via the City's web page, https://arlingtontx.gov/city_hall/departments/finance. Look for "Vendor/Supplier" under "Services". A cashier's check or an acceptable Bidder's Bond payable to the City of Arlington, Texas, in an amount of not less than five percent (5%) of the largest possible total for the bid submitted, must accompany the bid.
A Performance Bond and a Payment Bond, each for one hundred percent (100%) of the contract price, will be required. The successful bidder shall also furnish to the City a Maintenance Bond covering defects of material and workmanship for two calendar years following the City's approval and acceptance of the construction.
Not less than the prevailing wage rates adopted by the City of Arlington, Texas, and as set forth in the contract documents, must be paid on this project.
The City reserves the right to request bidders to provide Minority/Women Business Enterprises (MWBE) information, no preference shall be given to MWBE Prime bidders. All bidders are required to comply with the City's MWBE Policy and Procedures, including any contract specific goals or good faith effort requirements.
In case of ambiguity or lack of clearness in stating prices in the Proposal, the City reserves the right to accept the most advantageous construction thereof to the City or to reject the proposal.
The City reserves the right to reject any or all bids and waive any or all informalities. No bid may be withdrawn until the expiration of ninety (90) days from the date bids are opened.
All inquiries must be submitted to the City in accordance with the Instructions to Bidders of the contract documents.
A PRE-BID MEETING will be held for this project on Thursday, May 16th, 2024 at 10:00 a.m. in the Public Works Conference Room, 2nd Floor, City Hall, 101 W. Abram Street, Arlington, TX, 76010. If you have any questions concerning this project, please contact Sergio Quiroga at (817)- 459-6605 or email at Sergio.Quiroga@arlingtontx.gov. Deadline for questions is on May 23rd, 2024.
IPL0172277
May 8,15 2024

NOTICE TO BIDDERS

Sealed bids received by the City of Arlington at the Office of the Purchasing Manager, 500 E. Border Street, 7th Floor, Arlington, Texas 76010 until 2:00 p.m. on the 30th of May 2024 for: RFP NUMBER: 24-0199
Request for Proposals for Employee Benefits
PRE-PROPOSAL MEETING:
May 7, 2024 at 10:00AM
Cowboys Conference Room
500 E. Border St., 7th Floor
Arlington, Texas 76010
The City of Arlington is requesting quotes directly from Insurance and Service Providers. Proposals submitted by agents, consultants or brokers will not be considered. The City's agent of record is HUB International who will be assisting the City of Arlington with evaluation of the RFP responses.
Official bid or proposal document(s) are available to any supplier registered on the City's Procurement Portal at <https://arlington-tx.ionwave.net/Login.aspx>, or by contacting the office of the Purchasing Manager, Chase Bank Business Office, 500 E. Border Street, 7th Floor, P.O. Box 90231, Arlington, Texas 76010. The City of Arlington reserves the right to reject any or all bids and waive any and all informalities.
s/s Jim Ross
Mayor
s/s Alex Busken
City Secretary
IPL0171319
May 1,8 2024

SECTION 00 11 13
INVITATION TO BIDDERS

RECEIPT OF BIDS
Electronic bids for the construction of Offsite Sewer Line and Meter Station to Serve Laprelle, City Project Number 104588 ("Project") will be received by the City of Fort Worth via the Procurement Portal <https://fortworthtexas.bonfirehub.com/portal/?tab=openOpportunities>, under the respective Project until 2:00 PM. CST, Thursday, May 16th, 2024.
Bids will then be opened publicly and read aloud beginning at 2:00 PM CST in the City Council Chambers.
Your submissions must be uploaded, finalized and submitted prior to the Project's posted due date. The City strongly recommends allowing sufficient time to complete this process (ideally a week prior to the deadline) to begin the uploading process and to finalize your submission. Uploading large documents may take time, depending on the size of the file(s) and your internet connection speed. The Bonfire portal can be accessed using Microsoft Edge, Google Chrome, or Mozilla Firefox. Javascript must be enabled. Browser cookies must be enabled. Electronic submission is subject to electronic interface latency, which can result in transmission delays. All bidders or proposers assume the risk of late transmission/ submission. The City shall not be held liable if an interested bidder or proposer is unable to submit a complete bid/ response before the published deadline due to transmission delays or any other technical issues or obstructions. The City strongly recommends allowing sufficient time to complete the submission process (ideally a week before the deadline) to begin the uploading process and to finalize your submission to give adequate time in the event an issue arises.
All submissions must be submitted electronically prior to the close date and time under the respective Project via the Procurement Portal: <https://fortworthtexas.bonfirehub.com/portal/?tab=openOpportunities>
Failure to submit all completed required information listed in the respective Solicitation will be grounds for rejection of a bid as non-responsive. No late bids/proposals shall be accepted. Bids delivered in any other manner than using the Bonfire Platform (Procurement Portal) will not be accepted or considered.
If, upon being opened, a submission is unreadable to the degree that material conformance to the requirements of the procurement specifications cannot be ascertained, such submission will be rejected without liability to the City, unless such bidder provides clear and convincing evidence (a) of the content of the submission as originally submitted and (b) that the unreadable condition of the Electronic Bid was caused solely by error or malfunction of the Bonfire Platform (Procurement Portal). Failure to scan a clear or readable copy of a bid into the system does not constitute and shall not be considered an error or malfunction of the Bonfire Platform (Procurement Portal). Bidders are encouraged to fully review each page of every document within their submission prior to submitting to ensure all documents are clear, legible, and complete.
SUPPORT
For technical questions, visit Bonfire's help forum at <https://vendorsupport.gobonfire.com/hc/en-us>
Contact the Bonfire support team at Support@GoBonfire.com or by calling 1-800-354-8010. To get started with Bonfire, watch this five-minute training video:
Vendor Registration and Submission [VIDEO] – Bonfire Vendor Support (gobonfire.com)
GENERAL DESCRIPTION OF WORK
The major work will consist of the (approximate) following: 5000 LF of Sanitary Sewer main ranging from 15" – 24" in size, Meter Station, Meter Station Pad, and Pavement Extension along Wisdom Way Drive.
PREQUALIFICATION
Certain improvements included in this project must be performed by a contractor or designated subcontractor who is pre-qualified by the City at the time of bid opening. The procedures for qualification and pre-qualification are outlined in the Section 3 of 00 21 13 – INSTRUCTIONS TO BIDDERS.
DOCUMENT EXAMINATION AND PROCUREMENTS
The Bidding and Contract Documents may be examined or obtained via the Procurement Portal <https://fortworthtexas.bonfirehub.com/portal/?tab=openOpportunities>, under the respective Project. Contract Documents may be downloaded, viewed, and printed by interested contractors and/or suppliers.
EXPRESSION OF INTEREST
To ensure potential bidders are kept up to date on any new information pertinent to this project, all interested parties should indicate their intent to bid in the Procurement Portal by selecting "yes" under the Intent to Bid section. All Addenda will be posted in the Procurement Portal <https://fortworthtexas.bonfirehub.com/portal/?tab=openOpportunities>, under the respective Project.
CITY'S RIGHT TO ACCEPT OR REJECT BIDS
City reserves the right to waive irregularities and to accept or reject any or all bids.
AWARD
City will award a contract to the Bidder presenting the lowest price, qualifications and competencies considered.
ADVERTISEMENT DATES
May 1, 2024
May 8, 2024
IPL0171343
May 1,8 2024

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CITY OF FORT WORTH
PUBLIC NOTICE

Notice is hereby given that the following ordinance was adopted by the Fort Worth City Council at their regular meeting held on Tuesday, January 23, 2024

ORDINANCE NO. 26697-01-2024

AN ORDINANCE AMENDING THE COMPREHENSIVE ZONING ORDINANCE, ORDINANCE NO. 21653, AS AMENDED TO CHANGE THE ZONING DISTRICTS FOR CERTAIN PROPERTIES; PROVIDING A PENALTY CLAUSE; PROVIDING FOR PUBLICATION AND NAMING AN EFFECTIVE DATE.
BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF FORT WORTH:

SECTION 1.

ZC-23-127 N of Rancho Canyon Way, W of John Day Road, and S of Eagle Mountain Parkway 573.897 ac.

Zoning Change:

From: Unzoned

To: "A-5" One-Family and "K" Heavy Industrial
Description:

"A-5" ONE-FAMILY

BEING 497.789 acres of land situated in the Greenberry Overton Survey, Abstract No. 972, City of Fort Worth, Denton County, Texas, and a portion of a tract of land described to GRBK Edgewood LLC as recorded in County Clerks File No. 2021-227988, Real Property Records, Denton County, Texas, and containing a calculated area of 497.789 acres (21,683,674 Sq. Feet) of land.

"K" HEAVY INDUSTRIAL

BEING 76.109 acres of land situated in the Greenberry Overton Survey, Abstract No. 972, City of Fort Worth, Denton County, Texas, and being a portion of a tract of land described to GRBK Edgewood LLC as recorded in County Clerks File No. 2021-227988, Real Property Records, Denton County, Texas, and containing a calculated area of 76.109 acres (3,315,287 Sq. Feet) of land.

ZC-23-150 3105 Mitchell Boulevard 0.16 ac.

Zoning Change:

To: Add Conditional Use Permit (CUP) to allow a daycare in "A-5" One-Family for a maximum of five (5) years with development standards for supplemental setbacks, number of parking spaces behind the front building wall, front yard parking, front yard paving, and reduction of supplemental setbacks from 20 feet to 10 feet on the north and south portion of the property attached as Exhibit 'A'; site plan approved attached as Exhibit 'B' and on file with the Development Services Department
Description:
Wesleyan Hills Addition Block 8A, Lot 6
SP-23-013 12101 Trinity Boulevard 5.6 ac.

Zoning Change:

To: Amend site plan for "PD 292" Planned Development- Light Industrial to increase total building square footage from 157,424 to 186,029; site plan approved attached as Exhibit 'C' and on file with the Development Services Department
Description:
Northeast Industrial Center, Block 1, Lot 1
ZC-23-161 11701 US Highway 377 South 710.4 ac.

Zoning Change:

From: "A-5" One-Family, "R1" Zero lot line/cluster, "CR" Low Density Multifamily, "C" Medium Density Multifamily and "G" Intensive Commercial
To: Tract 1: PD/A-5 One-Family and PD/R-2 Townhouse Cluster; Tract 2: PD/R2 Townhouse Cluster, PD/D High Density Multifamily, and PD/G Intensive commercial, with development standards including but not limited to open space and multifamily design standards attached as Exhibit 'D'; site plan waived
Description:
TRACT 1
BEING a 544.102 acre tract in the T. Finley Survey, Abstract No. 1878, T.F. Rogers Survey, Abstract No. 1357, T&NO RR CO Survey, Abstract No. 1565, D.T. Finley Survey, Abstract No. 1901, in Tarrant County, Texas, being the remainder portion of a called 1,214.61 acre tract described in instrument to Johnny Hampton (Bud) Vinson II & Cheryl Vinson, recorded in Clerk File No. D204159103 Official Public Records, Tarrant County, Texas, (O.P.R.T.C.T.).

TRACT 2

Being that certain tract of land situated in the T. & N.O. R.R. Company Survey, Abstract Number 1565, the G.H. & H. R.R. Company Survey, Abstract Number 624, the T.D. Finley Survey, Abstract Number 1901, the T.F. Rogers Survey, Abstract Number 1357 and the Elizabeth Laughston Survey, Abstract Number 988, Tarrant County, Texas and being all of that tract of land described by deed to S.J. Bryant Irvin Commercial Development, LP, recorded in Instrument Number D204159103, County Records, Tarrant County, Texas and containing 7,242,578 square feet or 166.267 acres of land more or less.
ZC-23-164 2000 Block of Greybull Trail, Old Glory Trail; Otter Court; Cut Bank Trail; 9000 Block of Beaver Trail; 2101 and 2193 Cunningham Road 26.03 ac.

Zoning Change:

To: Amend "PD 411" Planned Development/Specific Use for all uses in "A-5" One-Family with 50-foot buffer along eastern property line to remove the requirement for a 50-foot buffer along the eastern property line; site plan waived
Description:
South Fork Addition Block 1 Lots 1-17, Block 2 Lots 1-22, Block 3 Lots 1-10, Block 4 Lots 1-22, Block 5 Lots 1-18, Block 6 Lots 1-11, Block 7 Lots 1-15, Block 8 Lot 1
ZC-23-169 1600 T Square Street 3.0 ac.

Zoning Change:

From: "G" Intensive Commercial

To: "A-5" One-Family

Description:

BEING a tract of land situated in the Thornton K. Hamby Survey, Abstract Number 815, City of Fort Worth, Tarrant County, Texas, being all of that tract of land described by deed to SMRE Investments, Inc., recorded in Instrument Number D221195349, County Records, Tarrant County, Texas, and containing 151,332 square feet or 3.474 acres of land more or less.
ZC-23-175 1509, 1601, 1617, 1629 & 1701 T Square Street 3.08 ac.

Zoning Change:

From: "A-5" One-Family and "G" Intensive Commercial

To: "R2" Townhouse/Cluster

Description:

E.T. Square Addition Block 3 Lots 1-F and 1-G
ZC-23-176 361 South Riverside Drive 0.49 ac.

Zoning Change:

From: "B" Two-Family and "J" Medium Industrial

To: "PD-FR" for all FR uses plus the following Permitted uses; Warehouse or Bulk Storage Wholesale Office or Sample Room, Wholesale Bakery, or produce market, wholesale warehouse, Furniture or Cabinet Repair or Construction, Assembly of Pre-manufactured Parts, Except for Vehicles, Trailers, Airplanes or Mobile Homes, Bottling Works, Milk or soft drinks, Printing, Lithographing, book binding, newspapers or publishing, Sheet Metal Shop, Machine Shop, Welding Shop Custom Work (not structural), Automotive Repair Paint and Body Shop (no cars for this use shall be stored overnight outside the building), and Auto Parts Supply Retail, site plan waiver requested
Description:
TRACT 1
BEING all of Lots 17 and 18, and a part of Lots 15 and 16, Block 28, Glenwood Addition, an Addition to the City of Fort Worth, Tarrant County, Texas, according to the Plat thereof recorded in Volume 63, Page 77, Plat Records, Tarrant County, Texas (P.R.T.C.T.), being a tract of land known as Tract 1, described in deed to William E. Simpkins, Sr., recorded in Volume 6954, Page 1281, Deed Records, Tarrant County, Texas (D.R.T.C.T.), and containing 17.893 square feet or 0.41 of an acre of land.

TRACT 2

BEING a part of Lots 1 and 2, Block 28, Glenwood Addition, an Addition to the City of Fort Worth, Tarrant County, Texas, according to the Plat thereof recorded in Volume 63, Page 77, Plat Records, Tarrant County, Texas (P.R.T.C.T.), being a tract of land known as Tract 2 & Tract 3, described in deed to William E. Simpkins, Sr., recorded in Volume 6954, Page 1281, Deed Records, Tarrant County, Texas (D.R.T.C.T.), and containing 3,450 square feet or 0.08 of an acre of land.

ZC-23-178 5600 Stratum Drive 4.07 ac.

Zoning Change:

From: "J" Medium Industrial

To: "PD-J" Planned Development for all uses in "J" Medium Industrial, plus Sheet Metal Shop and Metal Stamping;; Site Plan waived

Description: Fossil Creek Addition Phase 1 Section 2 Block 1 Lot 4BR

ZC-23-179 8811 Old Decatur Road 3.6 ac.

Zoning Change:

From: "C" Medium Density Multifamily

To: "E" Neighborhood Commercial and "F" General Commercial

Description:

"F" General Commercial Zoning

BEING a 1.4083 acre (61,347 square foot) tract of land situated in the Heirs of Benjamin Thomas Survey, Abstract No. 1497, City of Fort Worth, Tarrant County, Texas; said tract being part of Lot 8, Block 1, Boswell Marketplace, an addition to the City of Fort Worth according to the plat recorded in Instrument No. D217095492 of the Official Public Records of Tarrant County, Texas.

"E" Neighborhood Commercial Zoning

BEING a 2.1933 acre (95,539 square foot) tract of land situated in the Heirs of Benjamin Thomas Survey, Abstract No. 1497, City of Fort Worth, Tarrant County, Texas; said tract being part of Lot 8, Block 1, Boswell Marketplace, an addition to the City of Fort Worth according to the plat recorded in Instrument No. D217095492 of the Official Public Records of Tarrant County, Texas.

ZC-23-180 5501 Alliance Gateway Freeway 3.6 ac.

Zoning Change:

From: "K" Heavy Industrial

To: "PD/K" Planned Development with a base of "K" Heavy Industrial, plus helpad, site plan approved attached as Exhibit 'E' and on file with the Development Services Department
Description:

Alliance Gateway North Block 1 Lot 2R

ZC-23-181 3600 Walsh Ranch Parkway and 13453 West Freeway 4.93 ac.

Zoning Change:

From: "PD 573" Planned Development "MU-2" High Intensity Mixed-Use excluding uses and development standards on file with the Development Services Department; site plan waived

To: "PD/G" Planned Development for all uses in "G" Intensive Commercial with development standards for building height, roof sign and sign standards, bufferyard and bike requirements attached as Exhibit "F"; site plan waived

Description:

BEING a 4.930 acre tract of land situated in the Houston Tap & Brazoria Railroad Survey, Abstract No. 654, Parker County, Texas and being a portion of called 48.82 acre tract of land described as Tract 2 in deed MD1-041, LLC, as recorded in Instrument No. 202312016, Official Public Records of Parker County, Texas (O.P.R.P.C.T.).

ZC-23-183 3626 Meadowbrook Drive 0.61 ac.

Zoning Change:

From: "A-5" One-Family

To: "PD/ER" Planned Development for all uses in Neighborhood Commercial Restricted Plus Coffee Shop; Site plan required

Description:

Tandy Addition Block 17 Lot 1R

ZC-23-197 5012 E Rosedale Street 2.46 ac.

Zoning Change:

To: Amend "PD 1259" Planned Development for all uses in "MU-1" Low Intensity Mixed Use with waiver to maximum building height and minimum parking requirements to allow for permanent food trucks, site plan approved attached as Exhibit 'G' and on file with the Development Services Department

Description:

JA Caville Place, Block B Lot 1R

SECTION 2.

That any person, firm or corporation who violates, disobeys, omits, neglects or refuses to comply with or who resists the enforcement of any of the provisions of this ordinance shall be fined not more than Two Thousand Dollars (\$2,000.00) for each offense. Each day that a violation is permitted to exist shall constitute a separate offense.

SECTION 3.

That the City Secretary of the City of Fort Worth, Texas is hereby directed to publish this ordinance for two (2) days in the official newspaper of the City of Fort Worth, Texas, as authorized by V.T.C.A. Local Government Code Subsection 52.013.

SECTION 4.

That this ordinance shall take effect upon adoption and publication as required by law.

APPROVED AS TO FORM AND LEGALITY:

/s/ Christopher Austria

Assistant City Attorney

Adopted: January 23, 2024

A copy of this ordinance may be reviewed in the City Secretary's Office, Fort Worth Municipal Building/City Hall, 200 Texas Street, Fort Worth, Texas.

/s/ Jannette S. Goodall

City Secretary

IPL0171999

May 7-8 2024

Auctions

Garage Sales

Garage/Estate Sale-FW
704 Northwood Rd/76107(Fri/Sat/8-6)
c1ths jwlrly hshld fsh tkl ex eqp misc

4813 stanley keller rd
haltom city 76117 antiques, tools, saw, crafts, home decor

4 Family Sale!
5628 Puerto Vallarta Drive NRH Wed 12-5, Thurs/Fri/Sat 8-5

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5975 Stacy Lane "A" 76087
Approx. 1,600 sq.ft., \$2,195 per mo.
5975 Stacy Lane "C" 76087
Approx. 1,600 sq.ft., \$2,195 per mo.
Gene Thompson & Associates
817-246-4646 gtatx.com

White Settlement
300 Delmar Ct. #19 1-1 \$875
205 N. Las Vegas Tr. 1-1 \$1,245
418 Halliwell 1-1 \$1,295
Gene Thompson & Associates
817-246-4646 gtatx.com
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CITY OF GRAND PRAIRIE
ADVERTISEMENT FOR
QUALIFICATIONS

Qualifications will be received at 300 W. Main Street, Grand Prairie, Texas, 75050 or via Grand Prairie Planet Bids Portal: Link until Wednesday, May 15, 2024 at 10:00 AM, and publicly opened via teleconference at that time for the procurement of the following:

RFQ # 24126 – Elevated Storage Tanks Renovations at 109th and Traders Village
Further information and specifications may be obtained at Grand Prairie Planet Bids: <https://vendors.planetbids.com/portal/53284/portal-home> or from the Purchasing division at (972) 237-8269.

The city reserves the right to reject any or all bids and to waive formalities. The city also reserves the right to purchase these items through state awarded contracts or other intergovernmental agreements when it is in the best interest of the city.

IPL0171354

May 1,8 2024

CITY OF KENNEDALE
NOTICE OF PUBLIC HEARING

THE KENNEDALE PLANNING AND ZONING COMMISSION WILL HOLD A PUBLIC HEARING FOR THE FOLLOWING CASES ON THURSDAY, MAY 23, 2024 at 6 PM. IN THE CITY COUNCIL CHAMBERS, LOCATED AT 405 MUNICIPAL DRIVE, KENNEDALE, TARRANT COUNTY, TEXAS 76060. PZ CASE #24-09 TO CONDUCT A PUBLIC HEARING AND CONSIDER A REQUEST FOR A ZONING CHANGE FROM "I-INDUSTRIAL DISTRICT" TO "MH-MANUFACTURED HOME DISTRICT" AT 716 W KENNEDALE PARKWAY, BLOCK 1, LOT 26, OF THE WOODLEA ACRES ADDITION, CITY OF KENNEDALE, TARRANT COUNTY, TEXAS.

A SECOND PUBLIC HEARING FOR THIS CASE WILL BE HELD BEFORE CITY COUNCIL ON TUESDAY, JUNE 18, 2024, AT 5:30 PM IN THE CITY COUNCIL CHAMBERS, LOCATED AT 405 MUNICIPAL DRIVE, KENNEDALE, TARRANT COUNTY, TEXAS 76060. INTERESTED PERSONS ARE ENCOURAGED TO ATTEND THE PUBLIC HEARINGS TO OFFER PUBLIC COMMENTS OR PROVIDE WRITTEN COMMENTS PRIOR TO THE MEETING TO: COMMUNITY DEVELOPMENT DEPARTMENT, 405 MUNICIPAL DRIVE, KENNEDALE, TX, 76060. FOR MORE INFORMATION, PLEASE CALL (817) 985-2135.
IPL0172260
May 8 2024

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Lg-backyard-Txt/call:
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716 W KENNEDALE PARKWAY SITE POSTING



716 W KENNEDALE PARKWAY EXISTING LOTS









716 W KENNEDALE PARKWAY 200 FT MAILING LIST

ACCOUNT	OWNER_NAME	OWNER_ADDR	OWNER_CITY	OWNER_ZIP
7491794	DELEON, HERIBERTO	716 W KENNEDALE PKWY LOT 32	KENNEDALE, TX	76060
7491778	SMITH, PHILLIP	716 W KENNEDALE LOT 25 PKWY	KENNEDALE, TX	76060
7426445	CRAVEN, HARVEY	716 W KENNEDALE PKWY	KENNEDALE, TX	76060
7419503	GAMEL, SANDRA C	716 W KENNEDALE LOT 30 PKWY	KENNEDALE, TX	76060
41692373	KENNEDALE MHP LLC	PO BOX 33420	NORTHGLENN, CO	80233
4479173	KENNEDALE MHP LLC ETAL	PO BOX 33420	NORTHGLENN, CO	80233
41569199	KENNEDALE MHP LLC	PO BOX 33420	NORTHGLENN, CO	80233
40749681	KENNEDALE MHP LLC	PO BOX 33420	DENVER, CO	80233
7419414	HOGAN, JASON	716 W KENNEDALE PKWY # 16	KENNEDALE, TX	76060
7429207	KENNEDALE MHP LLC	PO BOX 33420	NORTHGLENN, CO	80233
7614918	KENNEDALE MHP LLC	PO BOX 33420	DENVER, CO	80233
40412946	BLACK, TIM	716 W KENNEDALE LOT 6 PKWY	KENNEDALE, TX	76060
7419341	CASTANON, ERNESTO	716 W KENNEDALE PKWY LOT 38	KENNEDALE, TX	76060
7491786	FRENCH, SANDRA L	825 CHICKASAW TRCE	GRAND PRAIRIE, TX	75051
41500229	BLACK, TIM	716 W KENNEDALE LOT 36 PKWY	KENNEDALE, TX	76060
41532155	FOSTER, JUSTIN	716 W KENNEDALE PKWY LOT 21	KENNEDALE, TX	76060
7891490	TREVINO, JUANITA	716 W KENNEDALE PKWY LOT 13	KENNEDALE, TX	76060
7440979	KENNEDALE MHP LLC	PO BOX 33420	NORTHGLENN, CO	80233
41532112	TREVINO, JUANITA	716 W KENNEDALE LOT 4	KENNEDALE, TX	76060
7614896	GUSTAFSON, ROBERT	716 W KENNEDALE PKWY LOT 3	KENNEDALE, TX	76060
7432909	BRUMFIELD, JOE E	716 W MANSFIELD LOT 31 HWY	KENNEDALE, TX	76060
7450303	FULLERTON, PERRY	716 W KENNEDALE LOT 20 PKWY	KENNEDALE, TX	76060
7473524	KENNEDALE MHP LLC	PO BOX 33420	DENVER, CO	80233
7419392	KENNEDALE MHP LLC	PO BOX 33420	DENVER, CO	80233
40412938	MAYER, JAMES E	716 W KENNEDALE LOT 35 PKWY	KENNEDALE, TX	76060
41532147	KENNEDALE MHP LLC	PO BOX 33420	NORTHGLENN, CO	80233
7419481	KENNEDALE MHP LLC	PO BOX 33420	NORTHGLENN, CO	80233
41532163	KENNEDALE MHP LLC	PO BOX 33420	NORTHGLENN, CO	80233
41577442	KENNEDALE MHP LLC	PO BOX 33420	NORTHGLENN, CO	80233
42027584	BLACK, TIM	716 W KENNEDALE PKWY LOT 6	KENNEDALE, TX	76060
42232846	HARRISON, PRICILLA	716 W KENNEDALE PKWY LOT 17	KENNEDALE, TX	76060
41577450	KENNEDALE MHP LLC	PO BOX 33420	NORTHGLENN, CO	80233
40121402	WHITE, DORSIE	716 KENNEDALE PKWY LOT 7	KENNEDALE, TX	76060
7894848	BLACK, TIM	716 W KENNEDALE LOT 6 PKWY	KENNEDALE, TX	76060
7491743	MESSER, WAYMAN	716 W KENNEDALE LOT 22 PKWY	KENNEDALE, TX	76060
7064179	KILGORE REAL ESTATE LLC	3420 WENTWORTH DR	ARLINGTON, TX	76001
14598154	LBK INDUSTRIES LLC	3620 WENTWORTH DR	ARLINGTON, TX	76001
6568750	PTL 2 LLC	1008 STAR GRASS DR	MANSFIELD, TX	76063
6772560	BCL REAL ESTATE LLC	103 GROSS BLDG A RD	MESQUITE, TX	75149
4479165	PTL 2 LLC	1008 STAR GRASS DR	MANSFIELD, TX	76063
6360017	LOWE, BOBBY E	167 PRIVATE 4789 RD	SPRINGTOWN, TX	76082
11157054	SMILEY'S RACING PRODUCTS INC	103 GROSS BLDG A RD	MESQUITE, TX	75149
6772552	BCL REAL ESTATE LLC	103 GROSS BLDG A RD	MESQUITE, TX	75149
6022170	NOWAK, ANDY	733 W KENNEDALE PKWY	KENNEDALE, TX	76060
14751912	AUTO37USA LLC	733 W KENNEDALE PKWY	KENNEDALE, TX	76060
14367586	DOMAIN INDUSTRIES LLC	3900 TRANSPORTATION DR	FORT WAYNE, IN	46818
41738179	KENNEDALE, CITY OF	405 MUNICIPAL DR	KENNEDALE, TX	76060
13458523	MALIKA & SANIA CORP	5000 AUBURN DALE AVE	COLLEYVILLE, TX	76034
6022162	JONES, GOLDEN W	7609 WOODLAND DR	ALVARADO, TX	76009
9431942	AMERICAN BEARING CO	PO BOX 1205	KENNEDALE, TX	76060
41738160	FELLOWSHIP ACADEMY	PO BOX 738	KENNEDALE, TX	76060
41463943	GL KENNEDALE LLC	510 W 6TH ST STE 250	LOS ANGELES, CA	90015
14870865	WINSUPPLY S FORT WORTH TX C	PO BOX 54786	LEXINGTON, KY	40555
14268081	BECERRA TRUCK & TRAILER SERV	705 W KENNEDALE PKWY STE A	KENNEDALE, TX	76060
11805471	RPM TRUCK & TRAILER REPAIRS	PO BOX 1970	MIDLOTHIAN, TX	76065



NOTICE OF PUBLIC HEARING

May 7, 2024

The Kennedale Planning and Zoning Commission will hold a public hearing for the following cases on Thursday, May 23, 2024 at 6 P.M. in the City Council Chambers, located at 405 Municipal Drive, Kennedale, Tarrant County, Texas 76060:

PZ CASE #24-09 TO CONDUCT A PUBLIC HEARING AND CONSIDER A REQUEST FOR A ZONING CHANGE FROM "I-INDUSTRIAL DISTRICT" TO "MH-MANUFACTURED HOME DISTRICT" AT 716 W KENNEDALE PARKWAY, BLOCK 1, LOT 26, OF THE WOODLEA ACRES ADDITION, CITY OF KENNEDALE, TARRANT COUNTY, TEXAS.

A second public hearing for this case will be held before city council on Tuesday, June 18, 2024, at 5:30 PM in the City Council Chambers, located at 405 Municipal Drive, Kennedale, Tarrant County, Texas 76060.

We are sending notification to those who own real property within 200 feet of the request in case they wish to attend the public hearings or provide written comments. You are not required to attend the public hearing, but if you choose to attend, you will have the opportunity to speak either in favor of or against the request(s). Written comments may be provided prior to the meeting to the City Secretary's Office, 405 Municipal Drive, Kennedale, TX 76060. If you would like more information about the case or public hearing process, please contact Nathan Gonzales at 817-985-2135 or ngonzales@cityofkennedale.com.

The agenda will be posted at 72 hours before the meeting at www.cityofkennedale.com/agendas and the meeting calendar is published at www.cityofkennedale.com/cal. For your reference, a map showing the property is below (Parcel #35):





Sincerely,

Nathan Gonzales
Director of Community Development
City of Kennedale
405 Municipal Dr
Kennedale, TX 76060
ngonzales@cityofkennedale.com
(817)985-2135

KENNEDALE COMPREHENSIVE PLAN UPDATE

FUTURE LAND USE PLAN

CATEGORIES

- Town Center 
- Downtown Village 
- Urban Village 
- Urban Corridor 
- Neighborhood Village 
- Neighborhood Corridor 
- Neighborhoods 
- Employment Center 
- Light Industrial District 
- Park & Open Space 
- Conservation Overlay 
- Potential Commuter Train or
Park & Ride Station 
- Schools 

A comprehensive plan shall not
constitute zoning regulations or
establish zoning district boundaries.

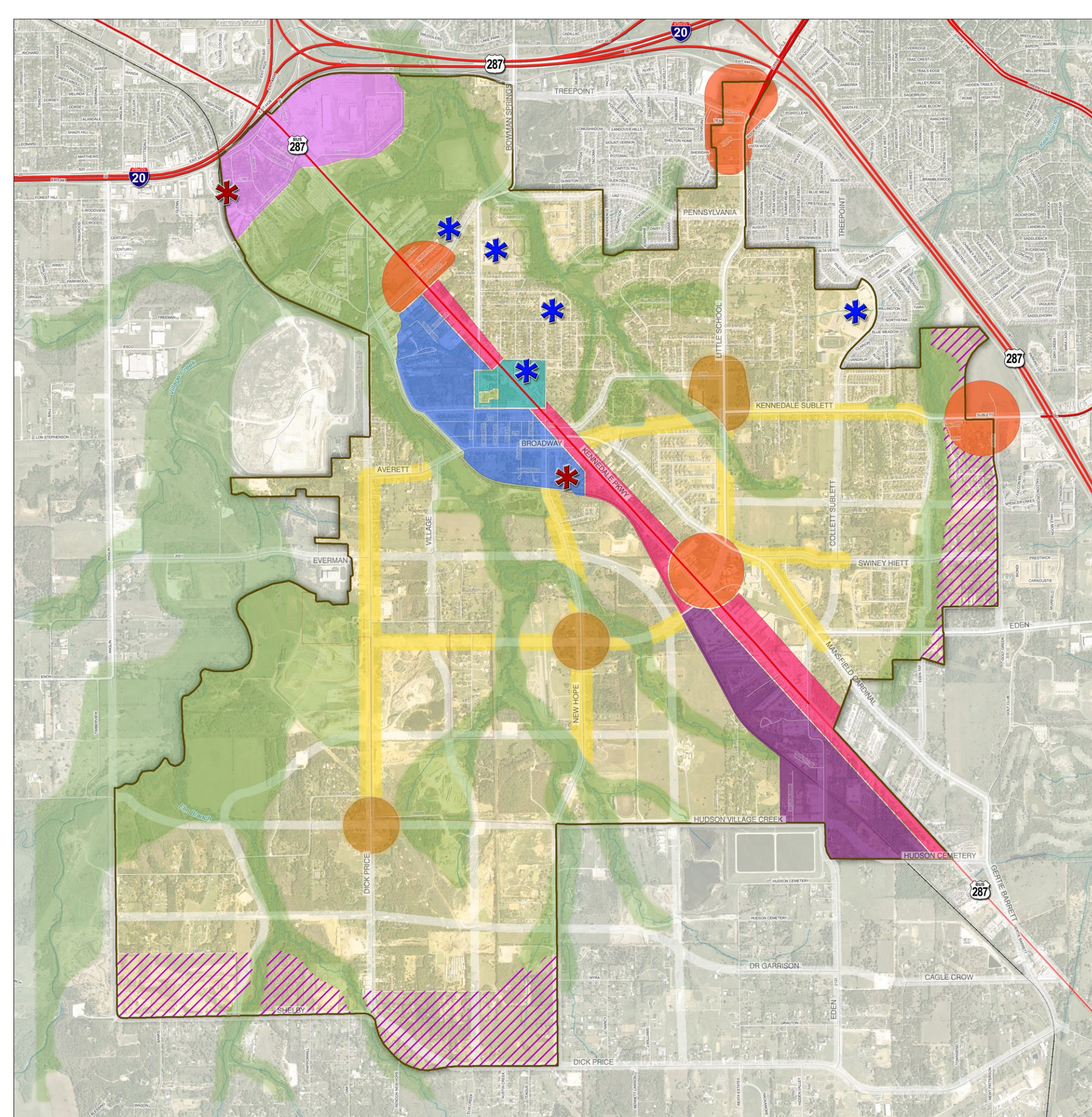
0 1,000 2,000 4,000 Feet



March 8, 2012



KENNEDALE
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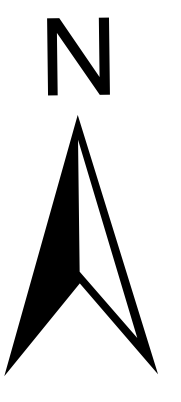
City of Kennedale Zoning Map



YOU'RE HERE YOUR HOME

LEGEND

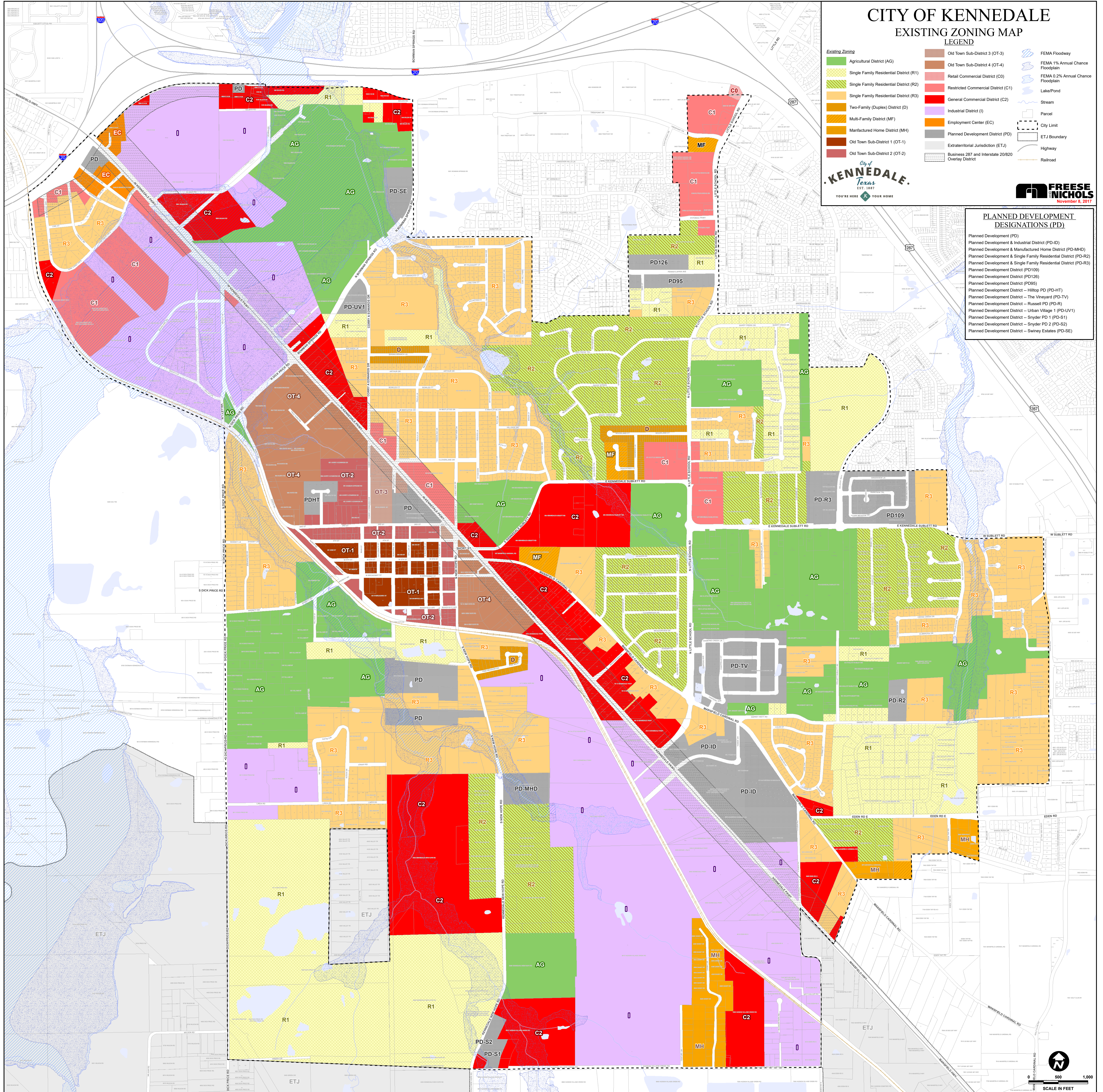
- City Limits
- Zoning**
- AG - Agricultural District
 - C0 - Retail Commercial
 - C1 - Restricted Commercial
 - C2 - General Commercial District
 - D - Two Family (Duplex) Residential District
 - EC - Employment Center
 - ETJ - Extra Territorial Jurisdiction
 - I - Industrial District
 - MF - Multi-Family District
 - MH - Manufactured Home District
 - OT-1 - Old Town Sub-District 1
 - OT-2 - Old Town Sub-District 2
 - OT-3 - Old Town Sub-District 3
 - OT-4 - Old Town Sub-District 4
 - R1 - Single Family Residential District
 - R2 - Single Family Residential District
 - R3 - Single Family Residential District
 - UV - Urban Village District
 - PD - Planned Development District
 - PD-109 - Planned Development District
 - PD-126 Planned Development District
 - PD-95 - Planned Development District
 - PD-HT - Planned Development District - Hilltop PD
 - PD-ID - Planned Development & Industrial District
 - PD-MHD - Planned Development & Manufactured Home District
 - PD-R - Planned Development District - Russell PD
 - PD-R2 - Planned Development & Single Family Residential District
 - PD-R3 - Planned Development & Single Family Residential District
 - PD-S1 - Planned Development District - Snyder PD 1
 - PD-S2 - Planned Development District - Snyder PD 2
 - PD-SE - Planned Development District - Swiney Estates
 - PD-TV - Planned Development District - The Vineyard
 - PD-UV1 - Planned Development District - Urban Village
- Overlays**
- Floodway
 - 1% Annual Chance Flood Hazard
 - 0.2% Annual Chance Flood Hazard
 - Business 287 and Interstate 20/820 Loop



1,000 500 0 1,000 Feet



SHIELD
ENGINEERING GROUP



CITY OF KENNEDALE

EXISTING ZONING MAP

LEGEND

- | | | | |
|---|--|------------------------------------|---------------|
| Existing Zoning | Agricultural District (AG) | Old Town Sub-District 3 (OT-3) | FEMA Floodway |
| Single Family Residential District (R1) | Old Town Sub-District 4 (OT-4) | FEMA 1% Annual Chance Floodplain | |
| Single Family Residential District (R2) | Retail Commercial District (C0) | FEMA 0.2% Annual Chance Floodplain | |
| Single Family Residential District (R3) | Restricted Commercial District (C1) | Lake/Pond | |
| Two-Family (Duplex) District (D) | General Commercial District (C2) | Stream | |
| Multi-Family District (MF) | Industrial District (I) | Parcel | |
| Manufactured Home District (MH) | Employment Center (EC) | City Limit | |
| Old Town Sub-District 1 (OT-1) | Planned Development District (PD) | ETJ Boundary | |
| Old Town Sub-District 2 (OT-2) | Extraterritorial Jurisdiction (ETJ) | Highway | |
| | Business 287 and Interstate 20/82 Overlay District | Railroad | |



PLANNED DEVELOPMENT DESIGNATIONS (PD)

- Planned Development (PD)
- Planned Development & Industrial District (PD-ID)
- Planned Development & Manufactured Home District (PD-MHD)
- Planned Development & Single Family Residential District (PD-R2)
- Planned Development & Single Family Residential District (PD-R3)
- Planned Development District (PD109)
- Planned Development District (PD126)
- Planned Development District (PD95)
- Planned Development District - Hilltop PD (PD-HT)
- Planned Development District - The Vineyard (PD-TV)
- Planned Development District - Russell PD (PD-R)
- Planned Development District - Urban Village 1 (PD-UV1)
- Planned Development District - Snyder PD 1 (PD-S1)
- Planned Development District - Snyder PD 2 (PD-S2)
- Planned Development District - Swiney Estates (PD-SE)



500 1,000
SCALE IN FEET

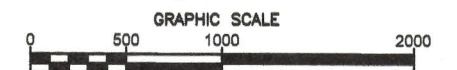


Shield Engineering Group, PLLC
Civil Engineering and Land Surveying

CITY OF KENNEDALE ZONING MAP



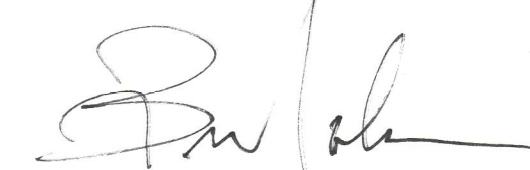
July 2016



LEGEND

- Agricultural District
- Single Family Residential District (R1)
- Single Family Residential District (R2)
- Single Family Residential District (R3)
- Old Town Sub-District 1 (OT-1)
- Old Town Sub-District 2 (OT-2)
- Old Town Sub-District 3 (OT-3)
- Old Town Sub-District 4 (OT-4)
- Two Family (Duplex) Residential District (D)
- Multi-Family District (MF)
- Manufactured Home District (MH)
- Retail Commercial (C0)
- Restricted Commercial District (C1)
- General Commercial District (C2)
- Employment Center (EC)
- Industrial District (I)
- Planned Development District
 - Planned Development District (PD)
 - Planned Development & Industrial District (PD-ID)
 - Planned Development & Manufactured Home District (PD-MHD)
 - Planned Development & Single Family Residential District (PD-R2)
 - Planned Development & Single Family Residential District (PD-R3)
 - Planned Development District (PD109)
 - Planned Development District (PD126)
 - Planned Development District (PD95)
 - Planned Development District - Hilltop PD (PD-HT)
 - Planned Development District - The Vineyard (PD-TV)
 - Planned Development District - Russell PD (PD-R)
 - Planned Development District - Urban Village 1 (PD-UV1)
 - Planned Development District - Snyder PD 1 (PD-S1)
 - Planned Development District - Snyder PD 2 (PD-S2)
 - Planned Development District - Swiney Estates (PD-SE)
- Flood Way (Draft Limits submitted to FEMA)
- Flood Plain (Draft Limits submitted to FEMA)
- Business 287 and Interstate 20/820 Loop Overlay Districts
- Extra Territorial Jurisdiction (E.T.J.)

THIS IS THE OFFICIAL ZONING MAP AS ADOPTED BY PART
OF ORDINANCE NO. 40 ON SEPTEMBER 9, 1993 BY THE
CITY COUNCIL OF THE CITY OF KENNEDALE, TEXAS

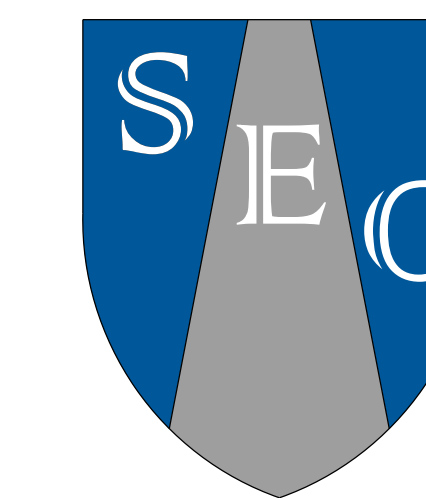

MAYOR


CITY SECRETARY



City of
KENNEDALE.
Texas
EST. 1887

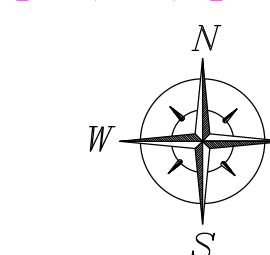
YOU'RE HERE  YOUR HOME



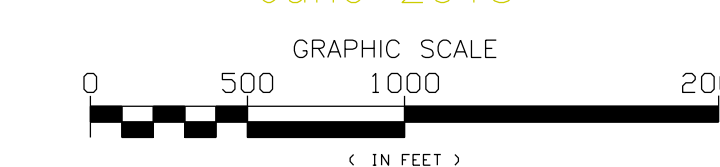
SHIELD ENGINEERING
GROUP, PLLC
CIVIL ENGINEERING &
SURVEYING SERVICES
TBPE F-11039
TBPLS 10193890

P.O. Box 470636
Fort Worth, Texas 76147
817.810.0696

CITY OF KENNEDALE ZONING MAP

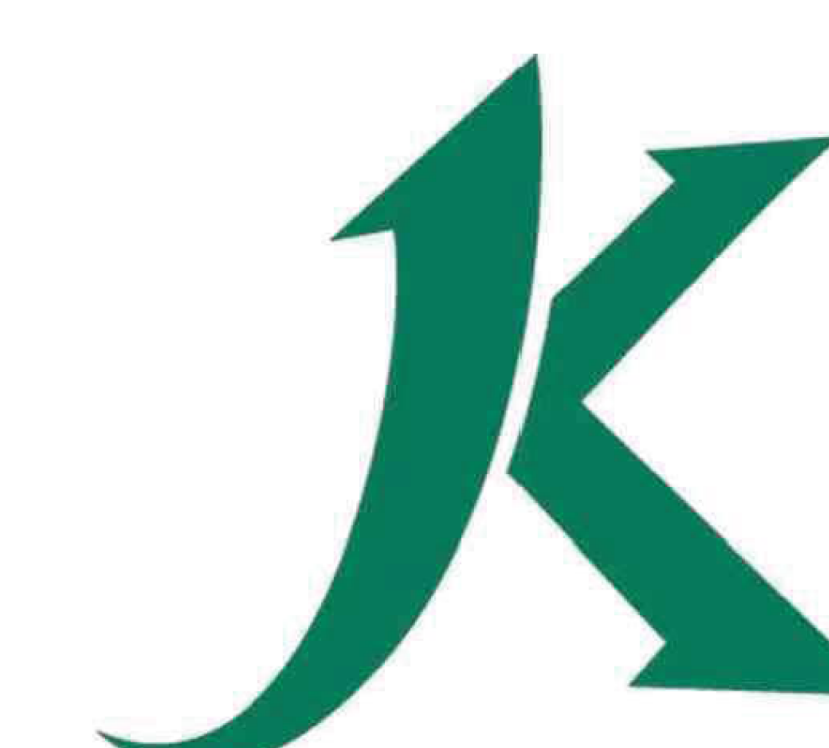


June 2015



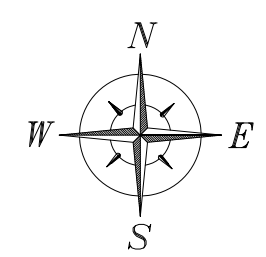
LEGEND

- Agricultural District
- Single Family Residential District (R1)
- Single Family Residential District (R2)
- Single Family Residential District (R3)
- Old Town District (OT)
- Two Family (Duplex) Residential District (D)
- Multi-Family District (MF)
- Manufactured Home District (MH)
- Retail Commercial (C0)
- Restricted Commercial District (C1)
- General Commercial District (C2)
- Employment Center (EC)
- Industrial District (I)
- Planned Development District
 - Planned Development District (PD)
 - Planned Development & Industrial District (PD-ID)
 - Planned Development & Manufactured Home District (PD-MHD)
 - Planned Development & Single Family Residential District (PD-R2)
 - Planned Development & Single Family Residential District (PD-R3)
 - Planned Development District (PD109)
 - Planned Development District (PD126)
 - Planned Development District (PD95)
 - Planned Development District - Hilltop PD (PD-HT)
 - Planned Development District - The Vineyard (PD-TV)
 - Planned Development District - Russell PD (PD-R)
 - Planned Development District - Urban Village 1 (PD-UV1)
 - Planned Development District - Snyder PD 1 (PD-S1)
 - Planned Development District - Snyder PD 2 (PD-S2)
- Flood Plain (Draft Limits submitted to FEMA)
- Business 287 and Interstate 20/820 Loop Overlay Districts
- Extra Territorial Jurisdiction (E.T.J.)

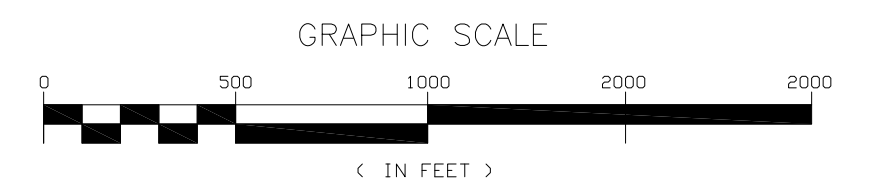


KENNEDALE
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CITY OF KENNEDALE



FEBRUARY 2014



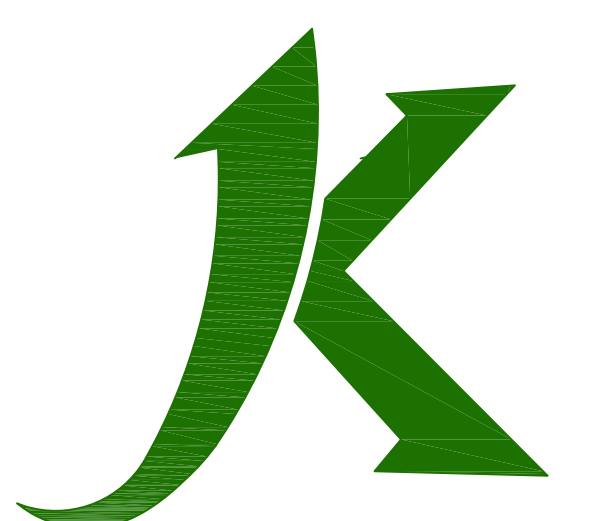
LEGEND

- Agricultural District
- Single Family Residential District (R1)
- Single Family Residential District (R2)
- Single Family Residential District (R3)
- Old Town District
- Two Family (Duplex) Residential District
- Multi-Family District
- Manufactured Home District
- Retail Commercial (C0)
- Restricted Commercial District (C1)
- General Commercial District (C2)
- Industrial District
- Planned Development District
- Planned Development & Industrial District
- Planned Development & Manufactured Home District
- Planned Development & Single Family Residential District (R2)
- Planned Development & Single Family Residential District (R3)
- Planned Development District - 109
- Planned Development District - 126
- Planned Development District - 95
- Planned Development District - HELLYOP PD
- Planned Development District - THE VINEYARD
- Employment Center District - EC
- Flood Plain District
- Business 287 and Interstate 20/820 Loop Overlay Districts
- Extra Territorial Jurisdiction (E.T.J.)

THIS IS THE OFFICIAL ZONING MAP AS ADOPTED BY PART OF ORDINANCE NO. 40 ON SEPTEMBER 9, 1993 BY THE CITY COUNCIL OF THE CITY OF KENNEDALE, TEXAS.

MAYOR

CITY SECRETARY

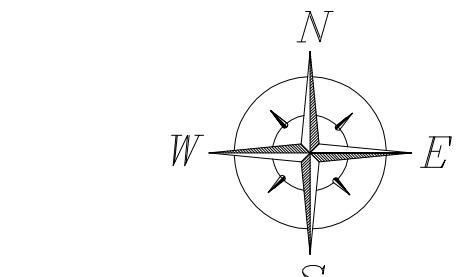


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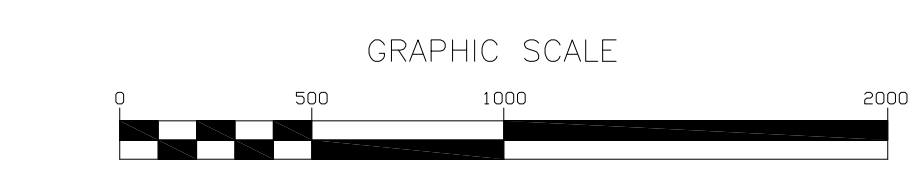


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TDRS Registration No. 1-230
www.tnppjnc.com

CITY OF KENNEDALE ZONING MAP



June 2008



LEGEND

- Agricultural District
- Single Family Residential District (R1)
- Single Family Residential District (R2)
- Single Family Residential District (R3)
- Old Town District
- Two Family (Duplex) Residential District
- Multi-Family District
- Manufactured Home District
- Retail Commercial (C0)
- Restricted Commercial District (C1)
- General Commercial District (C2)
- Industrial District
- Planned Development District
- Planned Development & Industrial District
- Planned Development & Manufactured Home District
- Planned Development & Single Family Residential District (R2)
- Planned Development & Single Family Residential District (R3)
- Flood Plain District
- Business 287 and Interstate 20/R20 Loop Overlay Districts
- Extra Territorial Jurisdiction (E.T.J.)

