Project Disclaimer

H375035

July 17, 2025

Brookfield
Battery Energy Storage System (BESS)
Thermal Runaway Event

Subject: Battery Energy Storage System Emissions Summary and Dispersion Modeling Report for a Thermal Runaway Event Disclaimer

On behalf of Brookfield, Hatch Ltd. has prepared the attached report to support an assessment of potential effects during an emergency thermal runaway event. While this document follows the general methodologies and principles of an ESDM as outlined in Ontario Regulation 419/05, it is not a formal ESDM submitted to or reviewed by the Ministry of the Environment, Conservation and Parks (MECP). This Disclaimer has been prepared by the Licensed Engineering Practitioner (LEP) Darcy Snyder, P.Eng.

Brookfield confirms that all information given to Hatch Ltd. LEPs in order to prepare this ESDM – style report was complete and accurate at the time of the assessment.

The Hatch LEP confirms the following:

i) Based on the information provided by Evolugen, as well as the information contained in the referenced studies, the information presented in this report is accurate as of the date it is signed and sealed;

ii) This report references a separate Fire Modeling Exercise Report that simulates a thermal runaway event in a single battery container. The LEP signing this document did not author, review, or assume professional responsibility for the contents or conclusions of that referenced study. No warranty is expressed or implied regarding the completeness or accuracy of the referenced materials.

iii) This report has been prepared solely for informational and due diligence purposes. It does not constitute a regulatory submission and should not be interpreted as such.

iv) The inclusion of referenced materials or findings from other studies does not imply certification, endorsement, or professional validation by the signing engineer.

v) Where this report references third-party studies or data, such information has been included for context only. The signing engineer has not independently verified the accuracy or completeness of those materials and does not accept responsibility for their content.

vi) This report is intended for use by the client and for public communication purposes. Any other use of this report, or reliance on it by third parties, is at their own risk.

Yours faithfully,

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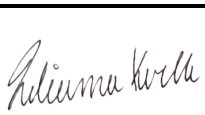
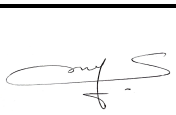
Hatch Ltd.

DS:jk

Battery Energy Storage System (BESS)
Thermal Runaway Event

Emission Summary and Dispersion Modeling Report

William McEwen Drive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Date	**Rev.**	**Status**	**Prepared By**	**Checked By**	**Approved By**	**Approved By**
			HATCH			**Client**

Executive Summary

This report presents analysis of a thermal runaway event at a proposed Battery Energy Storage System (BESS) facility (the Facility). Unlike standard ESDM reports, this document is not required to comply with the Ontario Regulation (O.Reg) 419/05, which governs air pollution emissions for industrial facilities, however it does follow the same general procedure as a complying ESDM report. The modeling results provide confidence that emissions during such an event would not pose significant risks to human health or the environment. The Guidance in the Ontario's Ministry of Environment, Conservation and Park (MECP) publication "Procedure for Preparing an Emission Summary Dispersion Modelling Report [Guideline A-10]" was followed.

Brookfield is proposing to develop a BESS project (the Project) located at 4186 William McEwan Drive located in Richmond, Ontario. The Project will consist of multiple battery containers, a substation, access roads and associated electrical infrastructure. During a thermal runaway event at the Facility, the primary source of air emissions will be a fire originating from one battery container.

This report references two different analyses reports for runaway thermal events. The first analyses is a Large Scale Burn Test Report for a Sungrow Battery Energy Storage System, carried out by DNV Ltd. The test aimed to assess the safety BESS during extreme battery failure events, where multiple cells experience thermal runaway simultaneously, potentially causing a large fire. It was designed to demonstrate that BESS systems can prevent such fires from spreading to adjacent containers.

The second analysis is a Fire Modeling Exercise Report that simulates a thermal runaway event in a single battery container. This study was conducted to evaluate the safety of a lithium battery storage facility by identifying potential contaminants, performing an emission inventory, and modeling fire dynamics. The goal was to assess fire-related hazards, airborne emissions, and their potential impact on the surrounding environment and human health

Each of the contaminants presented in the Emission Summary Table are below the corresponding ACB List limits with the exception of the seven contaminants without MECP POI Limits. It is recommended that a toxicological assessment be conducted to confirm appropriate POI limits. This ESDM Report demonstrates that in the event of a thermal runaway event, it is not anticipated the Facility will pose adverse effects to local air quality.

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1. Introduction

Hatch was retained by Brookfield BRP Canada Corporation (Brookfield) to conduct an analysis of potential impacts to local air quality resulting from a thermal runaway of the proposed Battery Energy Storage System (BESS). Brookfield is proposing to develop a site located at 4186 William McEwan Drive in Richmond, Ontario, south of Ottawa. The proposed development at the site involves the construction of multiple BESS containers, a substation, access roads and associated electrical infrastructure (the “Project”). The Project is directly responding to the Independent Electricity System Operator’s (IESO) request to increase supply and capacity to meet Ontario’s growing electricity expenditure and demand by constructing an energy storage facility. The facility will increase renewable grid capacity and storage, enhance flexible grid operations and provide a low carbon initiative to avoid greenhouse gas emissions by reducing reliance on higher carbon intensive facilities.

1.1 Purpose and Scope

This ESDM report was prepared to assess the potential for impacts to local air quality resulting from a thermal runaway event at a BESS facility. The scope of the emissions assessment includes one battery container, consisting of 48 battery modules, arranged in four modules per rack as seen in Figure 1.

The emissions from the thermal runaway event were assessed based on the specific composition of the batteries used within the system. The analysis considered the chemical makeup of the batteries, including the types of electrolytes, cathode, and anode materials. The batteries to be used at the Facility are lithium-ion. For the purpose of this assessment, the analysis assumes a worst-case event which is defined as the ignition of all top modules. During a thermal runaway event, these components undergo various exothermic reactions, leading to the release of gases such as hydrogen fluoride (HF) and carbon monoxide (CO), and other volatile organic compounds (VOCs).

1.2 Property and Surrounding Area Description

The Project is located at 4186 William McEwan Drive in Richmond, Ontario, south of Ottawa. The Project is proposing to develop these two sites with a substation, access roads and associated electrical infrastructure.

The Site is located in an area that is currently zoned as Rural Countryside, according to the City of Ottawa Zoning By-Law 2026-50. The areas surrounding the Site are Mineral Aggregate Reserve Zone to the North, and the remainder of the surrounding properties are Agricultural Zone.

1.3 Project Description

BESS is a technology that utilizes batteries to store electrical energy in electrochemical form. It can be used to store energy during low grid loads and output energy during high grid loads, for peak shaving and load shifting, thus mitigating grid fluctuations. In the case of a runaway thermal event, the components that make up the batteries undergo various exothermic reactions, leading to the release of gases such as HF, CO and other VOCs.

The Facility plans to use the PowerTitan 2.0 Liquid Cooled Energy Storage System.

1.4 Reference Reports

1.4.1 Sungrow Fire Study (SFD)

Sungrow Power Supply Co., Ltd. engaged Det Norske Veritas (DNV) to develop a Large Scale Burn Test plan for their PowerTitan 2.0 Full-Size Container BESS system in the Sungrow Fire Study (SFD) report. The test aimed to assess the impact of an extreme battery failure scenario, where multiple cells simultaneously experience thermal runaway, leading to propagation through the module stack and resulting in a significant battery container fire.

The goal of the large-scale burn test is to simulate an extreme battery failure event and evaluate the impact of a fully developed fire within the unit that could be caused by either internal or external factors. The extreme scenario assumed that a majority of cells within a module is triggered into thermal runway, ensuring a large-scale battery fire ensues.

The results of this report assessed the spread of the event, the temperature of the containers during the fire, the heat flux within the study and the ambient concentration of a suite of 55 gases downwind of the event (10 m distance and 1 m high). See Appendix A for a full list of tested gasses in this study. The maximum concentrations of these gases were utilized for this report. As a worst-case scenario, these concentrations were considered as the 1-hour average period values. The results were then compared to the MECP's POI limits from the ACB list to determine if the contaminants posed adverse effects to local air quality.

1.4.2 Fire Modelling Exercise (FME)

This Fire Modeling Exercise (FME) modeled the event of a thermal runaway event occurring in one single battery container. This study was completed to assess the safety of a Lithium battery storage facility by identifying potential contaminants, conducting an emission inventory, and performing fire dynamics modeling to evaluate fire-related hazards, airborne emissions, and their potential impact on the surrounding environment and human health.

The fire modeling software, PyroSim is used for the air emissions modeling of the Fire Modeling Exercise. The emissions of contaminants were assessed using a worst-case scenario. Boundary conditions were defined to simulate an open environment, allowing the unrestricted flow of gases and heat at the top and sides of the fire, while the bottom boundaries were treated as walls. The results of this exercise provided the heat release rate, the maximum temperature, varying contaminant concentrations, and the fractional effective dose (FED) concentrations of the fire. The FED concentration is a measure to quantify the exposure to toxic gases during the fire. The maximum concentration results of carbon monoxide from the Fire simulator were used as the maximum POI concentrations 1-hour averaging period for the most conservative results.

The modeling process involved simulating these reactions and the subsequent emissions to predict the dispersion patterns and concentrations of these hazardous substances. The modeling procedures and the results are summarized in Section 1.4.

2. Contaminants

The following sections provide an initial identification of all emissions and contaminants emitted at the Facility.

2.1 Contaminants Identification Table

Considering the emissions measured and modelled in the reference reports, the contaminants expected to be released during a thermal runaway event are summarized in 2.1. In cases where the same contaminant was presented in both analyses (SFD and FME reports) the higher concentration was used as the maximum concentration for that contaminant to ensure conservative results, representing a worst-case scenario.

The contaminants with out limits are assessed based on their de minimus concentrations to determine if these contaminants can be considered insignificant. If the threshold concentrations were found to be less than 0.1 µg/m³ (24-hr average) or less than 0.3 µg/m³ (1/2-hr average), then the impacts of this contaminant were considered insignificant, in accordance with the MECP *Procedure for Preparing an ESDM Report.*

3. Emergency Scenario, Emission Rate Estimation and Data Quality

This section provides a description of the emergency scenario used to assess the potential worst-case emissions during a thermal runaway event. The emission estimation methods used, and a data quality assessment of the emission rates as required by subparagraphs 6 and 7 in s.26 of O.Reg 419/05.

3.1 Description of Emergency Scenario

For this ESDM report, a worst-case scenario has been considered for the runaway thermal event at the Project that would result in the highest emission rate of the significant contaminants. The results of the large scale burn test performed by Sungrow indicated that during a thermal runaway event, there would be no more than 2 battery containers effected, with only one container catching fire. Sungrow indicated in the report that the thermal runaway initiated on one cell was limited to propagation to neighboring cells (to between 3 and 5 cells) with no further propagation throughout the module or unit. These results from this burn test were used in the PyroSim Model for the worst case scenario, using just one battery container in the thermal runaway event.

3.2 POI Concentration Calculation Method

3.2.1 Sungrow Fire Study

The maximum POI concentrations were calculated using the results from Table 5-3 in the Sungrow report, which includes discrete gas sampling results taken 10 meters away from the container fire. These results represent the highest concentrations measured and are assumed to approximate the concentration of contaminants from the fire. A total of 15 samples were collected over a 10-hour period, and the maximum values from these samples were used to determine the maximum 1-hour averaging period POI concentration for the most conservative results, as presented in 3.2**.** Appendix A provides a full list of the tested contaminants along with their corresponding maximum concentrations obtained from the sampling process. The concentrations reported in the Sungrow report were originally presented in parts per million by weight (ppmw) and were subsequently converted to micrograms per cubic meter (µg/m³) for the purposes of this analysis, in order to compare to the ACB list. A sample calculation demonstrating the conversion from ppmv to µg/m³ is included below.

$$Concentration\ \left(\frac{\mu g}{m^3}\right) = \text{ppmv} \times \frac{\text{ppmv}(\text{molecular weight}\ \left(\frac{g}{mol}\right) \times 1000}{24.45}$$

Where: ppmv is the concentration in parts per million by volume

Molecular weight is the molar mass of the gas in g/mol

24.45 is the molar volume of an ideal gas at 25 °C and 1 atm in L/mol

3.2.2 Fire Modeling Exercise

The maximum emission rates and associated Maximum POI concentrations are calculated by the PyroSim Model using the Heat Release Rate (HRR) method. This involves calculating the fuel mass flow rate so that combustion releases heat at the desired rate. This approach was used for simplicity and reliability. See Section 3 of the Fire Modelling Exercise report for sample calculations of the HRR method.

4. Site Plan and Local Meteorological Conditions

4.1 Site Plan

The nearest sensitive receptor is located approximately 122 metres north of the property line. The BESS area for the Facility is situated approximately 10 metres from the Site's fence line. To ensure a conservative and accurate representation of potential impacts, the fire modeling exercise used a 50-metre perimeter to simulate the fire scenario. This approach was selected to provide a reliable estimate of concentrations at the nearest sensitive receptor under worst-case conditions.

4.2 Prevailing Wind

A wind rose (see Figure 2) was developed for the Site based on the regional meteorological data available from the MECP. Surface meteorological data from the Ottawa Surface station

(ID 6106000) indicates that the prevailing wind is from the northwest direction. Blowing from the north west, receptors south east of the Site are more likely to be impacted by air emissions during an emergency scenario because the wind blows from this direction most often. However, wind direction is not known during the emergency scenario, so results are independent of the prevailing wind.

5. POI Concentrations

The maximum POI concentration of contaminants at sensitive receptors in proximity to the Project was estimated by considering the results from both reference studies, including the measurement of ambient contaminant concentrations and PyroSim dynamic fire simulator. The results from both studies have been compared to form an estimate of the accuracy the models and determine a sufficiently conservative estimate of the POI concentration at sensitive receptors.

5.1 Emission Summary Table

The emissions summary table compares the maximum expected POI concentrations to MECP ACB List Limits. Table 2 shows the emission summary for the worst-case emission rates for all significant contaminants. Immediately Dangerous to Life or Health (IDLH) values are substantially higher than the ACB limits, therefore comparisons were made solely against the ACB limits to ensure a conservative assessment. Since ACB limits are more stringent, compliance with these thresholds inherently ensures that IDLH levels are not exceeded.

5.2 Assessment of Contaminants with No MECP POI limits

Subparagraph 14 of s.26 of O.Reg. 419/05 requires an indication of the likelihood, nature and location of any adverse effect if the contaminant is not listed in the ACB List.

The contaminants with out limits are assessed based on their de minimus concentrations to determine if these contaminants can be considered insignificant.

Seven contaminants without MECP POI Limits are emitted in concentrations exceeding de minimus thresholds. These contaminants include the following:

- Hydrogen
- Ethyl methyl Carbonate
- 2,3,3-Trimwthylpentane
- 4-Methyl-2-heptanol
- 2-Ethylhexyl formate
- 3,4-Dimethylcyclohexanol
- Eladic acid methyl ester.

While not de minimus, because of the low POI concentration of each contaminant, it is not anticipated that these contaminants will pose adverse effects. It is recommended that a toxicological assessment be conducted to confirm appropriate POI limits.

5.3 Averaging Times

The averaging times of modelling results are to be consistent with the averaging times of the ACB List. Concentrations for averaging times that are not available from the modeling are calculated using the conversion formula set out in s. 17 of O. Reg. 419/05 shown below:

$$C_0 = C_1 \times \left(\frac{t_1}{t_0}\right)^n$$

Where: C_0 is the concentration at the new averaging period

C_1 is the concentration at the known averaging period

t_0 is the new averaging period (10-Min, ½-Hour, 30-Day)

t_1 is the known averaging period (usually 1-hr)

n is 0.28

6. Conclusions

The emissions rates and comparison of POI concentrations to the ACB List limits are summarized in Table 2**.**

Each of the contaminants presented in the Emission Summary Table are below the corresponding ACB List limits with the exception of the seven contaminants without MECP POI Limits. It is recommended that a toxicological assessment be conducted to confirm appropriate POI limits. This ESDM Report demonstrates that in the event of a thermal runaway event, it is not anticipated the Facility will pose adverse effects to local air quality.

Tables

Table 1. Sources and Contaminants Identification Table

Source Information			Expected Contaminants	Included in Modelling (Yes/No?)	Significant (Yes/No?)
Source ID	Source Description	General Location			
Bfire	Batttery Fire	Figure 1	CO, HF, HCL, VOCs, HCN, H_2S	Yes	Yes

Table 2. Emission Summary Table

Contaminant	CAS #	Maximum POI Concentration (µg/m³)	Averaging Period	MECP POI Limit (µg/m³)	Limiting Effect	Reg. Sch. No.	Benchmark	% of MECP POI Limit
Hydrogen	1333-74-0	9.97E+00	24 (DM)	#N/A	#N/A	#N/A	#N/A	Not DM
Methane	74-82-8	1.17E+01	24-hour	37330	Health	SL-PA	B2	<1%
Ethylene	74-85-1	6.60E-01	24-hour	40	Health	Guideline	B1	2%
Methanol	67-56-1	2.75E+00	24-hour	4000	Health	Standard	B1	<1%
Ethanol	64-17-5	5.28E+00	1-hour	19000	Health	Guideline	B1	<1%
Methyl acetate	79-20-9	6.22E-01	24-hour	3000	Health Odour	SL-JSL	B2	<1%
Ethyl acetate	141-78-6	1.51E+01	1-hour	19000	Health & Particulate	Guideline	B1	<1%
Dimethyl carbonate	616-38-6	2.07E+01	24-hour	920	Health & Particulate	SL-MD	B2	2%
Acetic acid	64-19-7	3.33E+00	24-hour	2500	Health	Guideline	B1	<1%
Benzene	71-43-2	2.62E-01	Annual	0.45	Health	Standard	B1	58%
		2.62E-01	Annual	4.5	-	AAV	B1	6%
		2.62E-01	24-hour	100	-	DAV	B1	<1%
		2.62E-01	24-hour	100	-	URT	B1	<1%
DL-sec-Butyl acetate	105-46-4	5.85E-01	24-hour	4750	Health	SL-JSL	B2	<1%
Ethyl methyl carbonate	623-53-0	2.19E+01	24 (DM)	#N/A	#N/A	#N/A	#N/A	Not DM
Isooctane	540-84-1	7.68E-01	24-hour	1750	Health	SL-JSL	B2	<1%
2,3,3-Trimethylpentane	560-21-4	1.15E+00	24 (DM)	#N/A	#N/A	#N/A	#N/A	Not DM
Toluene	108-88-3	7.74E-01	24-hour	2000	Health	Guideline	B1	<1%
3-Methylheptane	589-81-1	9.59E-01	24-hour	175	Health	SL-JSL	B2	<1%
Cyclopentanone	120-92-3	5.65E-01	24-hour	85	Health	SL-JSL	B2	<1%
Diethyl carbonate	105-58-8	5.95E-01	24-hour	120	Health	SL-MD	B2	<1%
2,2,4-Trimethylhexane	16747-26-5	6.46E-01	24-hour	175	Health & Particulate	SL-JSL	B2	<1%
1-Octene	111-66-0	3.77E-01	24-hour	50000	Health	Guideline	B1	<1%
Octane	111-65-9	5.40E+00	10-minute	61800	Health	Guideline	B1	<1%
Xylene	1330-20-7	7.13E-01	24-hour	7300	-	URT	B1	<1%
		7.13E-01	24-hour	730	Health	Standard	B1	<1%
		2.87E+00	10-minute	3000	Health	Standard	B1	<1%
2-Phenyl-1-propene	98-83-9	4.35E-01	1-hour	24000	Health	Guideline	B1	<1%
4-Methyl-2-heptanol	56298-90-9	2.19E+00	24 (DM)	#N/A	#N/A	#N/A	#N/A	Not DM
2-Octyl alcohol	123-96-6	2.41E+00	24-hour	135	Health & Particulate	SL-JSL	B2	2%
2-Ethylhexanol	104-76-7	5.27E+01	1-hour	600	Health	Guideline	B1	9%
Benzoic acid	65-85-0	2.05E-01	24-hour	700	Health	Guideline	B1	<1%
2-Ethylhexyl formate	5460-45-7	8.68E-01	24 (DM)	#N/A	#N/A	#N/A	#N/A	Not DM
Naphthalene	91-20-3	6.46E-01	24-hour	22.5	Health & Particulate	Guideline	B1	3%
		2.59E+00	10-minute	50	Health & Particulate	Guideline	B1	5%
3,4-Dimethylcyclohexanol	5715-23-1	8.61E-01	24 (DM)	#N/A	#N/A	#N/A	#N/A	Not DM
Decane, n-	124-18-5	2.91E+00	1-hour	60000	Health	Guideline	B1	<1%
Decene, 1-	872-05-9	9.42E-01	24-hour	60000	Health	Guideline	B1	<1%

Table 2. Emission Summary Table

Contaminant	CAS #	Maximum POI Concentration (µg/m³)	Averaging Period	MECP POI Limit (µg/m³)	Limiting Effect	Reg. Sch. No.	Benchmark	% of MECP POI Limit
Nonanal	124-19-6	9.56E-01	24-hour	75	Health & Particulate	SL-JSL	B2	1%
Tetrapropylene	6842-15-5	1.41E+00	24-hour	22	Health	SL-JSL	B2	6%
Triethylene glycol methyl ether	112-35-6	7.57E-01	24-hour	135	Health & Particulate	SL-JSL	B2	<1%
Lauryl alcohol	112-53-8	2.19E+00	24-hour	75	Health	SL-JSL	B2	3%
2,2,4-Trimethylpentanediol-1,3-diisobutyrate	6846-50-0	1.43E+02	24-hour	420	Health	SL-JSL	B2	34%
Methyl palmitate	112-39-0	3.18E+00	24-hour	120	Health	SL-MD	B2	3%
Eladic acid methyl ester	1937-62-8	6.47E+00	24 (DM)	#N/A	#N/A	#N/A	#N/A	Not DM
Methyl stearate	112-61-8	1.50E+00	24-hour	15	Health & Particulate	SL-JSL	B2	10%
Sulphur dioxide	7446-09-5	5.24E-02	1-hour	690	-	URT	B1	<1%
		5.24E-02	1-hour	100	Health & Particulate	Standard	B1	<1%
		2.15E-02	Annual	10	Health & Particulate	Standard	B1	<1%
Hydrogen sulphide	7783-06-4	1.14E-02	24-hour	70	-	URT	B1	<1%
		1.14E-02	24-hour	7	Health	Standard	B1	<1%
		4.60E-02	10-minute	13	Health	Standard	B1	<1%
Nitrogen oxides	10102-44-0	3.86E-02	24-hour	200	Health	Standard	B1	<1%
		9.41E-02	1-hour	400	Health	Standard	B1	<1%
Formaldehyde	50-00-0	1.01E-01	24-hour	65	Health	Standard	B1	<1%
Methacrolein	78-85-3	2.35E-01	24-hour	1.2	Health	SL-JSL	B2	20%
Carbon monoxide	630-08-0	3.00E-02	1/2-hour	6000	Health	Standard	B1	<1%

SL = Screening Level
Guidline = Summary of Standards and Guidelines to support O.Reg.419: Air Pollution - Local Air Quality, February 2008
JSL = Jurisdictional screening level
URT = Upper Risk Thresholds
DAV = Daily Assessment Value
AAV = Annual Assessment value
MD = Ministry-derived

Figures

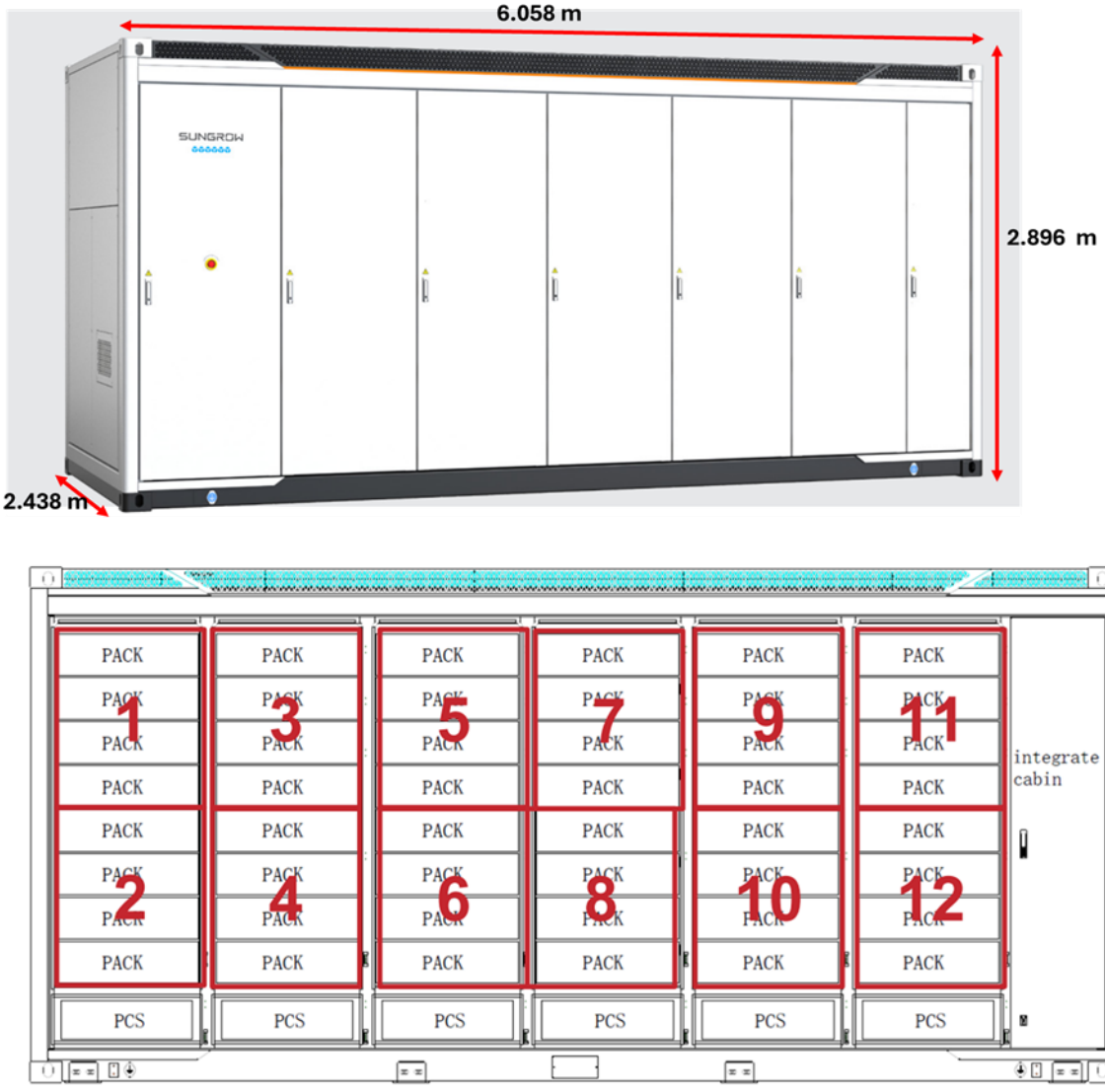

Figure 1: Battery Energy Storage System Geometry

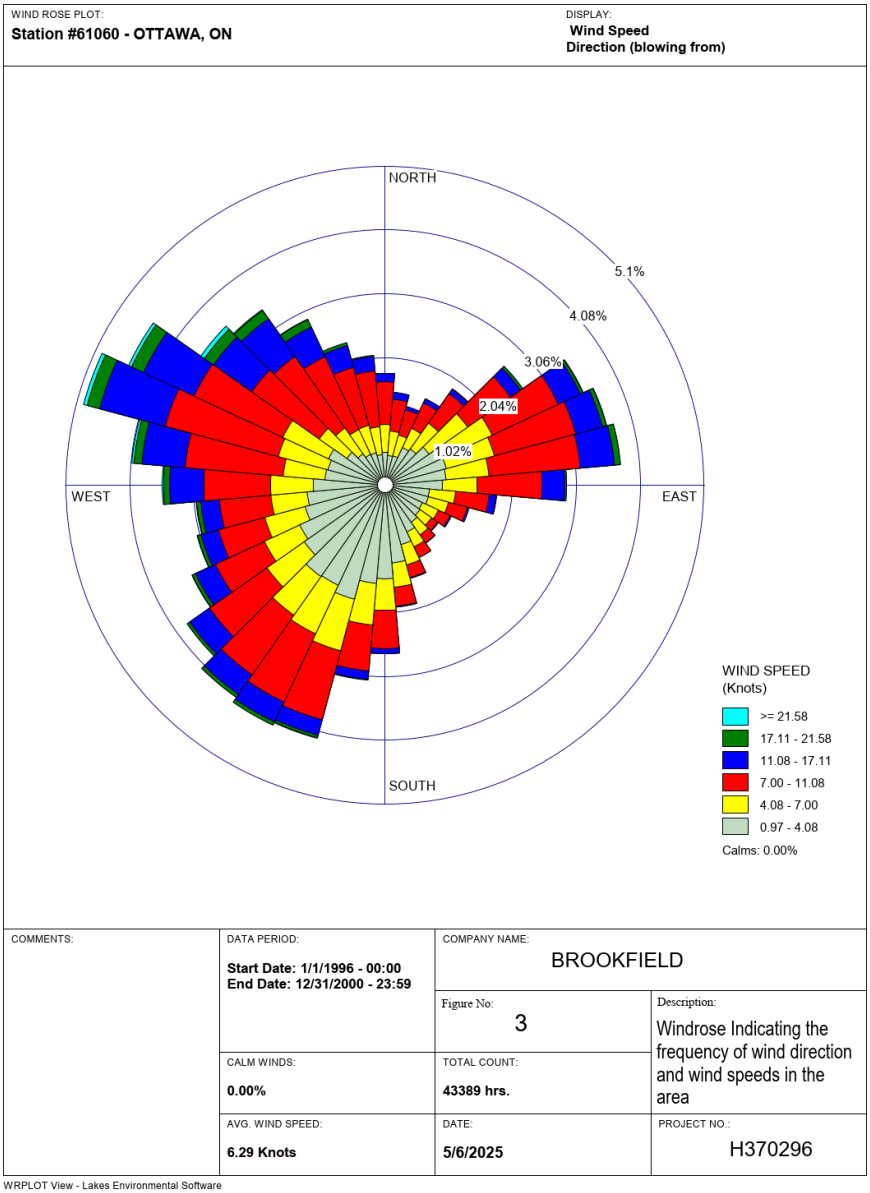

Figure 2: Windrose

Appendix A:
Sungrow Test Report Contaminant List and Results

Gases tested for in discrete sampling - Sungrow Test Report		
Gases Tested	**Max Concentration (ppmv)**	**Max Concentration (µg/m³)**
Nitrogen	N/A	N/A
Oxygen	N/A	N/A
Carbon dioxide	N/A	N/A
Hydrogen	294.5	24.28269939
Methane	43.3	28.40975869
Ethylene	1.4	1.606249489
Methanol	5.1	6.683607362
Ethanol	2.8	5.275680982
Methyl acetate	0.5	1.514887526
Ethyl acetate	4.2	15.13442945
Dimethyl carbonate	13.7	50.47315337
Acetic acid	3.3	8.105177914
Benzene	0.2	0.638920245
DL-sec-Butyl acetate	0.3	1.425226994
Ethyl methyl carbonate	12.5	53.22290389
2,3,4-Trimethylpentane	0.4	1.868695297
2,3,3-Trimethylpentane	0.6	2.803042945
Toluene	0.5	1.884130879
3-Methylheptane	0.5	2.335869121
2,2,5-Trimethylhexane	N/A	N/A
2-Ethyl-1-Hexene	N/A	N/A
Cyclopentanone	0.4	1.37609816
Diethyl carbonate	0.3	1.449447853
2,2,4-Trimethylhexane	0.3	1.573619632
1-Octene	0.2	0.917856851
2-Octene	N/A	N/A
Octane	0.7	3.270216769
1,1,3-Trimethylcyclohexane	N/A	N/A
Xylene	0.4	1.736768916
2-Phenyl-1-propene	0.09	0.434981595
2,2,4,6,6-Pentamethylheptane	N/A	N/A
4-Methyl-2-heptanol	1	5.326134969
3-Methylnonane	N/A	N/A
2-Octanol	1.1	5.858748466
2-Ethylhexanol	9.9	52.7287362
Benzoic acid	0.1	0.499460123
2-Ethylhexyl formate	0.3	2.113619632
Naphthalene	0.3	1.572564417
3,4-Dimethylcyclohexanol	0.4	2.097472393
Decane	0.5	2.909529652
1-Decene	0.4	2.294642127
1-Nonanal	0.4	2.326936605

Dodecane	N/A	N/A
Propylene tetramer	0.5	3.44196319
Trimethylene glycol monomethyl ether	0.5	1.842944785
1-Dodecanol	0.7	5.334543967
2,2,4-trimethyl-1,3-pentanediol Diisobutyrate	29.8	349.0683027
Methyl palmitate	0.7	7.742715746
Eladic acid methyl ester	1.3	15.76365644
Methyl stearate	0.3	3.662503067
Sulfur dioxide	0.02	0.052400818
Hydrogen sulfide	0.02	0.027874029
Nitrogen dioxide	0.05	0.09408998
Formaldehyde	0.2	0.245611452
Methacrolein	0.2	0.573316973