Appendix D.10 Climate Change Resilience Assessment

Environmental Review Report

East Windsor Generation Facility Expansion

Capital Power Corporation

SLR Project No.: 241.030524.00024

July 2024

Climate Change Resilience Assessment

East Windsor Generation Facility Expansion Project

Capital Power Corporation

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July 2024

Revision: 1

Revision Record

Revision	Date	Revision Description
0	April 11, 2024	Draft report issued for external review
1	July 2024	Report issued for public review

Statement of Limitations

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Attestation of Completeness

We the undersigned attest that this Climate Change Resilience Assessment was undertaken using recognized assessment tools and approaches that conform to the Public Infrastructure Engineering Vulnerability Committee Protocol High-level Screening Guide, and ISO 31000 Risk Management-Principles and Guidelines. The results of the assessment comply with the guide issued by Ontario's Ministry of the Environment, Conservation, and Parks for considering climate change in the environmental assessment process for projects regulated under the *Environmental Assessment Act* (Queen's Printer for Ontario 2017).

SLR Consulting (Canada) Ltd.

Prepared by:

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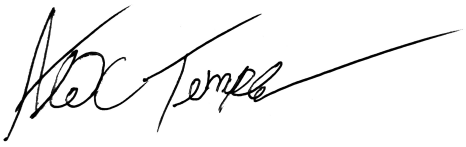
Date: July 2024

Prepared by:



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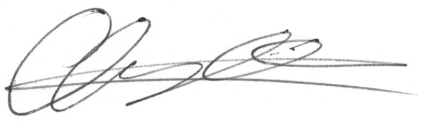

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Date: July 2024

Executive Summary

Capital Power Corporation (Capital Power), through its affiliate East Windsor (Expansion) L.P., is proposing the East Windsor Generation Facility Expansion (the "Project") in the City of Windsor, Ontario. The Project is in response to the Independent Electricity System Operator's (IESO's) call for additional natural gas generation capacity and would provide up to approximately 107 megawatts (MW) of additional gross generation capacity to the Windsor-Essex area and provincial electricity grid. The proposed Project is being designed to provide dependable capacity at peak times when Ontario's other generation sources are not capable of meeting demand.

Capital Power completed a climate change resilience assessment (CCRA) for the Project, as part of the Environmental Assessment (EA) of the Project under the Ontario *Environmental Assessment Act* (the Act). Under the Act, the Ministry of the Environment and Climate Change (MECP) requires proponents to consider the impacts of climate change on their project. MECP has issued a guide for proponents and practitioners to consider climate change and its potential effects on a proposed project (Queen's Printer for Ontario 2017). The objective of the CCRA is to consider the potential interactions between current and projected future climate events, and the potential vulnerability of the individual elements of the Project. The CCRA for the Project followed the Public Infrastructure Engineering Vulnerability Committee (PIEVC) High Level Screen Guide (HLSG) approach to evaluate the potential impacts of climate change on the Project (PIEVC 2022). The PIEVC protocol is aligned with the International Organization for Standardization (ISO) 31000 Risk Management Guidelines and is referenced within Annex G of Infrastructure Canada's Climate Lens Guideline as an appropriate framework for developing climate change resilience assessments. This report has been prepared in support of the Environmental Review Report (ERR) to meet the requirements of the Environmental Screening Process for Electricity Projects (ESP).

No high risks were identified by the CCRA under current or future climate change scenarios for the current Project design using SSP2-4.5 and SSP5-8.5 scenarios. The findings of the CCRA conclude that the Project is considered to be resilient to current and future climate events that may interact with the Project elements during its lifespan (25+ years). Overall, the design of the Project and its respective components are expected to limit the negative effects of climate events. Additionally, normal operation and maintenance procedures, health, and safety practices, as well as emergency risk management, are expected to adequately limit the current and future effects of climate change before high to very high consequences occur at the Project Site.

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Acronyms and Abbreviations

AR	Assessment Report
°C	Degrees Celsius
CCRA	Climate Change Resilience Assessment
CDD	Canadian Disaster Database
CEA	Canadian Electrical Association
CMIP	Coupled Model Intercomparison Project
CMIP6	Coupled Model Intercomparison Project Phase 6
EA Act	*Environmental Assessment Act*
ECCC	Environment and Climate Change Canada
EPRI	Electric Power Research Institute
ERCA	Essex Region Conservation Authority
GCM	General Circulation Model
GHG	greenhouse gas
GSU	Generator Step-up
GWh	Gigawatt Hour
HLSG	High-Level Screening Guide
hr	Hour
HVAC	Heating, Ventilation, and Air Conditioning
IESO	Independent Electricity System Operator
INFC	Infrastructure Canada
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
km	Kilometre(s)
Km/h	Kilometres per hour
m	metre(s)
MECP	Ministry of Environment, Conservation and Parks
mm	Millimetre
MW	megawatt
O&M	Operation and Maintenance
PIEVC	Public Infrastructure Engineers Vulnerability Committee
RFP	Request for Proposal
SSP	Shared Socioeconomic Pathway
UAT	User Acceptance Testing
UN	United Nations
Yr	Year

1.0 Introduction

1.1 Project Overview

Capital Power Corporation (Capital Power), through its affiliate East Windsor (Expansion) L.P., is proposing the East Windsor Generation Facility Expansion (the Project) in the City of Windsor, Ontario. The Project is responsive to the Independent Electricity System Operator's (IESO's) call for additional natural gas generation capacity and would provide up to approximately 107 megawatts (MW) of additional gross generation capacity to the Windsor-Essex area and provincial electricity grid. The proposed Project is being designed to provide dependable capacity at peak times when Ontario's other generation sources are not capable of meeting demand.

The Project consists of the construction and operation of a new simple cycle natural gas generation facility located adjacent to the existing East Windsor Cogeneration Centre (EWCC)[1]. The Project will make use of some existing infrastructure, including tying into the existing EWCC high-voltage interconnection line to avoid the need for a new connection to the provincial electricity grid. Ancillary project components include an equipment building, storage building, stormwater management system and site servicing. Additional areas for temporary staging and laydown will be required during the construction phase.

The Project will be located within the existing EWCC fenceline, primarily on lands owned by Capital Power. These lands represent a series of parcels, municipally known as 228 to 276 Cadillac Street (hereby referred to as the Project Site). These parcels, along with others on the west side of Cadillac Street, were formerly residential properties that were acquired, and residences removed, as part of the original development of the EWCC. The Project Site is approximately 0.61 hectares (1.49 acres) in size and is currently used for site access, parking, mowed and landscaped areas, and formerly storage (removed at the City's request) (**Figure 2-1**).

1.2 Objective

This climate change resilience report (CCRA) will consider the potential interactions between current and projected future climate events, and the potential vulnerability of the individual elements of the Project. Under the *Environmental Assessment Act* (the Act), the Ministry of the Environment and Climate Change (MECP) requires proponents to consider the impacts of climate change on their project. MECP has issued a guide for proponents and practitioners to consider climate change and its potential effects on a proposed project (Queen's Printer for Ontario 2017).

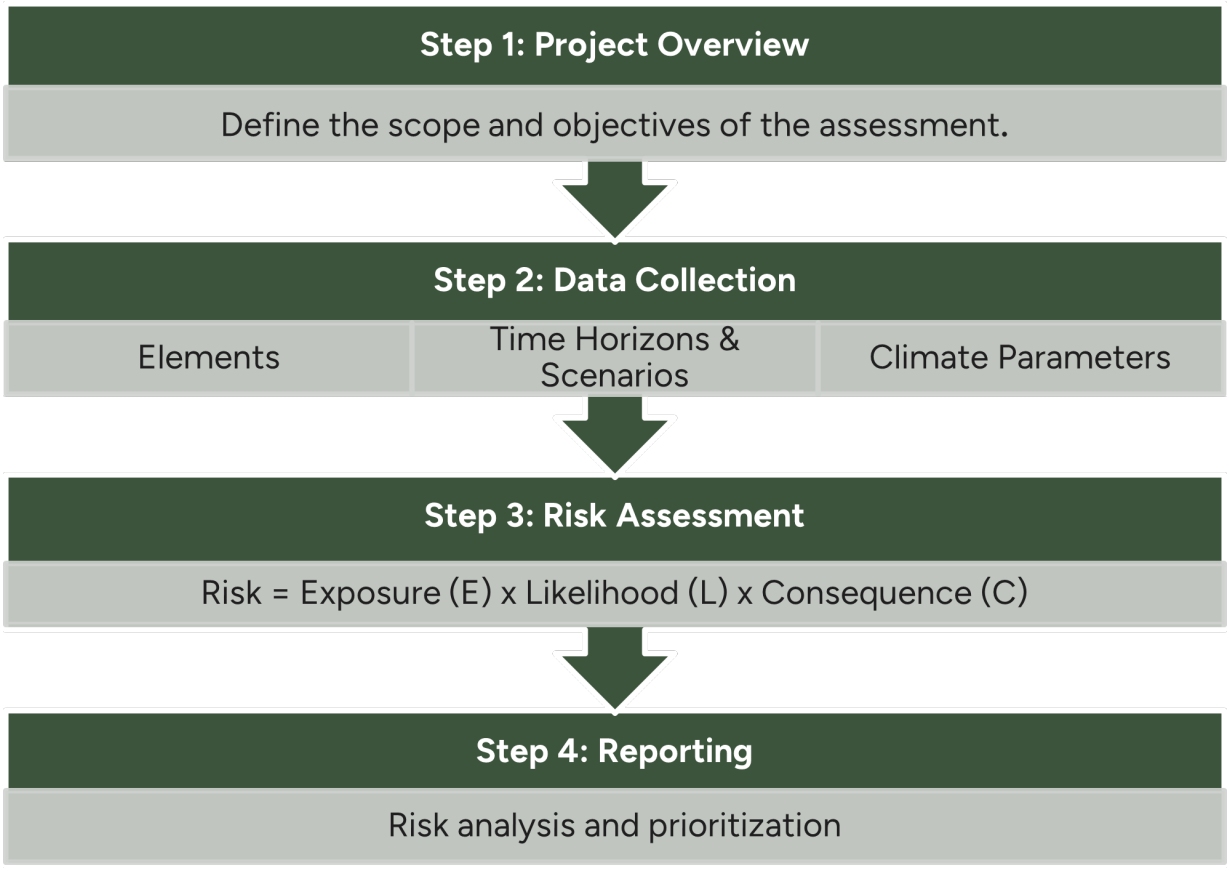
For the CCRA, the shared socioeconomic pathways (SSP) climate scenarios SSP2-4.5 and SSP5-8.5 developed by the United Nations (UN) Intergovernmental Panel on Climate Change (IPCC) were used to project future climate events.

[1] The EWCC is located on the land leased from Ford Motor Company of Canada Ltd. In addition to generating electricity, the facility used to provide steam to the neighbouring Ford Motor company for their Ford Windsor engine plant. Since the closure of the engine plant in 2018, Ford has terminated the Steam Supply Agreement with EWCC, and EWCC now operates in simple cycle mode as a peaking plant.

The CCRA for the Project followed the Public Infrastructure Engineering Vulnerability Committee (PIEVC) High Level Screen Guide (HLSG) approach to evaluate the potential impacts of climate change on the Project (PIEVC 2022). The PIEVC protocol is aligned with the International Organization for Standardization (ISO) 31000 Risk Management Guidelines and is referenced within Annex G of Infrastructure Canada's Climate Lens Guideline as an appropriate framework for developing climate change resilience assessments.

This CCRA has been conducted using the PIEVC HLSG which generally consists of 4 steps (**Figure 1-1**) (PIEVC 2022), with additional detail presented in **Section 4.1**. Additionally, it is alignment with the International Organization for Standardization (ISO) 31000 Risk Management Guidelines (in line with guidance outlined by Infrastructure Canada's (INFC) Climate Lens General Guidance (INFC 2019). This CCRA aligns with the approach presented by the Canadian Electricity Association (CEA) in their climate change risk management guide (CEA 2019) and the climate change adaptation planning guide (CEA 2020); both of which are specific to electricity utilities.

Figure 1-1: Flow Diagram of the PIEVC HLSG Process



2.0 Project and Site Context

2.1 Project Site Context

The Project Site is located adjacent to the EWCC, on a series of parcels municipally known as 228 to 276 Cadillac Street. The Project will be located within the existing EWCC fenceline, primarily on lands owned by Capital Power. The EWCC is located on the Ford Powerhouse property, on land leased from the Ford Motor Company of Canada Ltd.

The current EWCC facility fenceline encompasses the Project Site lands, which are currently used for site access, parking, landscaped areas, and formerly storage (removed at the City's request).

2.2 EWCC Context

The existing EWCC commenced commercial operations in 2009. The EWCC now operates its existing generators in simple cycle mode to produce electricity using two Gas Turbine Generators (GTGs). Electricity is generated and directed to the provincial grid when the dispatched by the IESO.

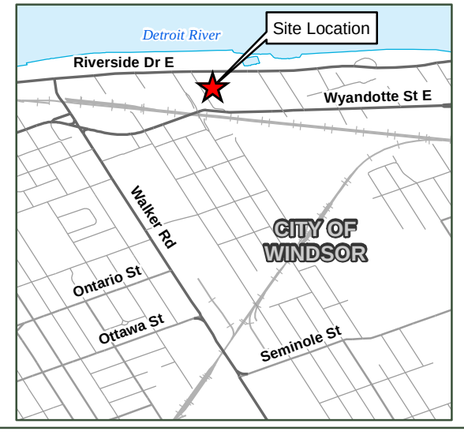
2.3 Project Context

Key project components include one General Electric (GE) 7E.03 simple cycle gas turbine generator and all associated infrastructure, including an inlet air filter, exhaust stack, fuel gas compressor, natural gas handling system, instrumentation and control systems, and a Generator Step-Up (GSU) transformer. Ancillary project components include an equipment building, storage building, stormwater management system and site servicing. The Project will be operated and dispatched independently of the EWCC.

LEGEND:

- Capital Power Lands - Owned
- Capital Power Lands - Leased
- Project Site
- Parcel Fabric (City of Windsor)
- Railway

NOTES:
PARCEL FABRIC, CITY OF WINDSOR OPEN DATA CATALOGUE, ACCESSED NOVEMBER, 2022.
IMAGERY: COUNTY OF ESSEX; 2023



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THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

EAST WINDSOR GENERATION FACILITY EXPANSION

CLIMATE CHAGE RESILIENCE ASSESSMENT

PROJECT LOCATION

SLR

FIGURE NO:
2-1

DATE: July 2024

PROJECT NO: 241.30524.00024

3.0 Data Collection

3.1 Elements

The Project components (i.e., referred to as elements in the PIEVC process) assessed in the CCRA are listed below from north to south. These components include:

- Underground Storm Water Tank;
- Parking;
- Storage Building;
- Equipment Building:
  - Packaged Electronic and Electrical Control Compartment (PEECC)
  - Gas Compressor Enclosure;
  - Inlet Air Filter;
  - Gas Turbine;
  - Exhaust Stack;
  - Fin Fan Cooler;
  - Generator;
  - Generator Circuit Breaker (GCB);
  - Power Distribution Centre (PDC);
  - Unit Auxiliary Transformer (UAT);
  - Isophase Bus Duct.
- Transformer Noise Abatement Wall;
- Generator Step-up Transformer (GSU);
- GSU Noise Wall;
- Switchyard (expansion);
- Oil-water Separator (OWS).

Appendix A shows the current conceptual layout of the Project, including the subcomponents of these various larger components.

3.2 Time Horizons and Climate Scenarios

The Project is anticipated to have a life span of approximately 25+ years (construction, operation, and decommissioning, or refurbishment and renewal). Therefore, climate change projections at minimum were needed until the year 2040. To consider opportunities for refurbishment and renewal of the Project beyond 2040 with its current fuel source (natural gas) or through a hydrogen fuel source refurbishment, the time horizons selected for the CCRA include the current period, 2050, and 2080.

Extending the time horizons considered for the CCRA necessitated the exploration of future variations and uncertainties in climate change projections, whereby projected future events may occur in greater frequency and severity sooner than current models predict.

The time horizons selected for the CCRA are:

- Current Period: recent historical climate data that establishes a baseline;
- 2050: mid-term projections for relevant climate events;
- 2080: long-term projections for relevant climate events.

The future climate is dependent on a number of factors, not limited to the gravitational interactions in our solar system, as well as the cumulative and compounding effects of global greenhouse gas (GHG) emissions in the earth's atmosphere. Therefore, GHG emission choices made today will affect the climate of tomorrow. The IPCC was commissioned in 1988 by the World Meteorological Organization and the United Nations Environment Program to provide policymakers with regular assessments of the scientific basis of climate change. These assessments include the impacts of climate change and future risks, as well as options for climate change adaptation and mitigation (Bush and Lemmen 2019). The IPCC issues regular updates as assessment reports (AR) that present the results of climate change models developed by the Coupled Model Intercomparison Project (CMIP). CMIP6 was presented in the IPCC's AR6 (i.e., the sixth assessment report) and presented the use of SSP (i.e., shared socioeconomic pathways) GHG scenarios to project future climatic conditions The updated CMIP6 model using SSPs define how societal choices can lead to changes in climate change related outcomes by the end of the century (ECCC 2023).

There are five SSPs developed to model future climate events based on low to high GHG emission scenarios: SSP1-1.9, SSP1-2.6, SSP2-4.5, SSP3-7.0, and SSP5-8.5. Climate scenario SSP5-8.5 was selected as a conservative approach to account for limited to no mitigation of global GHG emissions (i.e., the worst case). Under climate scenario SSP5-8.5, the global average temperatures are projected to increase above 1.5 degrees Celsius (°C) to 4°C by the end of the 21st century (Arias et al., 2021). Historically, and under SSP5-8.5, Canada and the Arctic are expected to warm at 2 to 3 times greater than the global average rate (Bush and Lemmen 2019). In comparison, SSP2-4.5 suggests a future scenario where there is moderate societal and economic development, and efforts are made to address climate change, resulting in a moderate level of increase in GHG emissions and global temperature rising.

3.3 Climate Parameters

The climate parameters (i.e., temperature and precipitation) and their associated events (i.e., climate events) identified for the CCRA were selected based on their likelihood to occur and potential to interact with the components of the Project (**Table 3-1**).

Current and future climate data were collected and analyzed to inform the risk assessment. Data were collected for each climate parameter to understand their thresholds (and definitions) and trend indicators under future climate scenarios. Data for climate parameters were collected from reliable and well-established sources, such as Environment and Climate Change Canada's (ECCC) operated website: climatedata.ca.

As stated in the Guide to Adaptation Planning for Electricity Companies in Canada, climate change and extreme weather events pose a risk to electricity companies and their assets (CEA 2020).

Table 3-2 shows the expected climate hazards for the current period, as well as for the years 2050 and 2080. These predictions are based on the median results from a group of climate change models known as the Coupled Model Intercomparison Project Phase 6 (CMIP6). The table includes two scenarios: SSP2-4.5, which assumes we continue with our current emission-generating practices, and SSP5-8.5, which assumes a perpetual increase in the level of global GHG emissions.

Table 3-2 and **Table 3-3** present the projected rate of change between historic and future climate events under these climate change scenarios.

Table 3-1: Climate Events and Indicators (SSP2-4.5 and SSP5-8.5)

Climate Parameters and Events	Threshold	Future Trend		Source
		SSP2-4.5	SSP5-8.5	
Temperature				
Extreme Heat	Days with Max Temperature >30°C	Increase	Increase	CMIP6, climatedata.ca
Humidex	Days with a maximum Humidex >35°C	Increase	Increase	CMIP6, Climatedata.ca, CLIMsystems
Extreme Cold	Days with Minimum Temperature <-15°C	Decrease	Decrease	CMIP6, climatedata.ca
Heating Degree Days	Days with an Average Temperature <18°C	Decrease	Decrease	CMIP6, climatedata.ca
Icing Days	Days with a Daily Maximum Temperature at 0°C or below	Decrease	Decrease	CMIP6, CLIMsystems
Precipitation				
Extreme Precipitation (short duration, high intensity)	mm in 60 Minutes	Increase	Increase	CMIP6, climatedata.ca, CLIMsystems
Longer Duration Rainfall	mm in a 24-hour Period	Increase	Increase	CMIP6, climatedata.ca, CLIMsystems
Winter Precipitation	Monthly Mean mm of Precipitation from November to March	Decrease	Decrease	Ahmed et al. (2022)
Other Climate Indicators				
Flooding – Pluvial	Localized flooding occurring because of short-duration, high-intensity rainfall, or as long-duration rainfall (>24-hour period)	ND	ND	Sargent and Lundy (2023)
Flooding – Fluvial	Flooding caused by a watercourse (anthropogenic or natural) breaching its overbank	ND	ND	ERCA (2023); Simonovic et al. (2021); Public Safety Canada (2023)

Climate Parameters and Events	Threshold	Future Trend		Source
		SSP2-4.5	SSP5-8.5	
Ice Storms	Days with Freezing Rain	ND	ND	-
Rain on Ice	Rain on-ice events are assessed as extreme precipitation or long-duration rainfall events combined with ice days or ice storm events.	ND	ND	-
Rain on Snow	Rain-on-snow events are assessed as extreme precipitation or long-duration rainfall events combined with extreme snow	ND	ND	-
High Wind	High Winds >100 km/h	No Trend	No Trend	CMIP6, CLIMsystems
Tornadoes	Rotating column of air originating from clouds, caused by low-pressure air systems that contact the ground, and producing wind speeds from 110 km/h to > 321 km/h	No Trend	No Trend	Public Safety Canada (2023)

Notes: ND, not determined
-, data not collected

Table 3-2: Current Period and Projected (SSP2-4.5) Climate Parameters

Climate Parameters and Events	Time Horizons and Climate Scenarios			Confidence
	Current Period	2050 (SSP2-4.5)	2080 (SSP2-4.5)	
Temperature				
Extreme Heat (Days with Tmax > 30°C)	29	54	64	High
Heat Wave (times/yr)	7	23	41	High
Humidex (Days with Humidex > 35°C)	29	53	73	High
Coldest Day (°C)	-18	-14	-10	Medium
Extreme Cold (Days with Tmin < -15°C)	4	-	-	High
Heating Degree Days (°C*Day/yr)	3211	2858	2498	High
Cooling Degree Days (°C*Day/yr)	548	750	877	High
Icing Days	40	29	11	High
Precipitation				
Extreme Precipitation (short duration, high intensity) (15 min, 100-year return in mm/hr)	137	168	177	Medium
Extreme Precipitation (short duration, high intensity) (1-hr, 100-year return in mm/hr)	61	75	78	Medium
Max 1-day Total Precipitation (mm/day)	40	44	49	Medium
Winter Precipitation (snowfall records)	Decrease in 30 years	Decreasing	Decreasing	High
Other Climate Parameters				
High Wind (km/hr, 50-year return)	102	98	98	Medium
Note: Where possible, numerical values have been rounded to the nearest whole number, (-) indicates a data value at or below zero however climate event occurrence is still possible				

Table 3-3: Current Period and Projected (SSP5-8.5) Climate Parameters

Climate Parameters and Events	Time Horizons and Climate Scenarios			Confidence
	Current Period	2050 (SSP5-8.5)	2080 (SSP5-8.5)	
Temperature				
Extreme Heat (Days with Tmax > 30°C)	29	67	87	High
Heat Wave (times/yr)	7	33	135	High
Humidex (Days with Humidex > 35°C)	28	72	97	High
Coldest Day (°C)	-18	-11	-6	Medium
Extreme Cold (Days with Tmin < -15°C)	4	-	-	High
Heating Degree Days (°C*Day/yr)	3211	2517	2094	High
Cooling Degree Days (°C*Day/yr)	548	858	1162	High
Icing Days	40	15	3	Medium
Precipitation				
Extreme Precipitation (short duration, high intensity) (15min, 100-year return in mm/hr)	137	173	203	Medium
Extreme Precipitation (short duration, high intensity) (1-hr, 100-year return in mm/hr)	61	76	89	Medium
Max 1-day Total Precipitation (mm/day)	40	45	49	Medium
Winter Precipitation (snowfall records)	Decrease in 30 years	Decreasing	Decreasing	High
Other Climate Parameters				
High Wind (km/hr, 50-year return)	102	103	102	Medium
Note: Where possible, numerical values have been rounded to the nearest whole number, (-) indicates a data value at or below zero however climate event occurrence is still possible				

Due to the complex nature of various climate change parameters and the associated limitations of climate modelling data, the following climate hazards identified for the assessment were considered qualitatively:

- Flooding – Pluvial;
- Flooding – Fluvial;
- Tornadoes.

While quantitative values could not be assigned for these climate events, their interaction with the Project components was assessed and relative risks were described.

4.0 Risk Assessment Methods and Results

4.1 Risk Assessment Framework

The CCRA followed the general framework of the PIEVC HLSG. As documented in the HLSG, risk is dependent on the exposure of a Project component to potential climate-related events, the likelihood of that event happening, and the consequence of the interaction. Each Project component's risk rating is detailed in **Section 4.2** below. The general flowchart of resilience assessment is presented in **Figure 4-1**.

4.1.1 Exposure

An analysis of exposure for each of the Project components was conducted as the first step of the risk assessment. Exposure considers if the component is exposed to a particular climate event. If the answer is "yes", it is exposed and it receives a score of 1; if the answer is "no", the component is not considered exposed, and it receives a score of 0. Components not exposed to a particular climate event (i.e., receiving a score of zero), do not warrant further assessment. **Appendix B** outlines the components evaluated and their exposure to the identified climate hazards.

Cumulative, and or compounding climate hazards were considered beyond the scope of this CCRA based on the uncertainty in predicting and quantifying the impact of potential combined events that could have a material impact on the Project.

4.1.2 Likelihood

The likelihood of a climate event occurring is based on quantified measures of uncertainty expressed probabilistically (i.e., based on statistical analysis of observations or model results, or expert judgment) (Bush and Lemmen 2019). **Table 4-1** provides the likelihood ratings used for this CCRA. The scale used for this CCRA for quantified climate events was developed by Mastrandrea et al. (2010) as a guidance note for the IPPC A5 on consistent treatment of uncertainties (Kause et al. 2022).

Figure 4-1: Flowchart for Climate Resilience Assessment

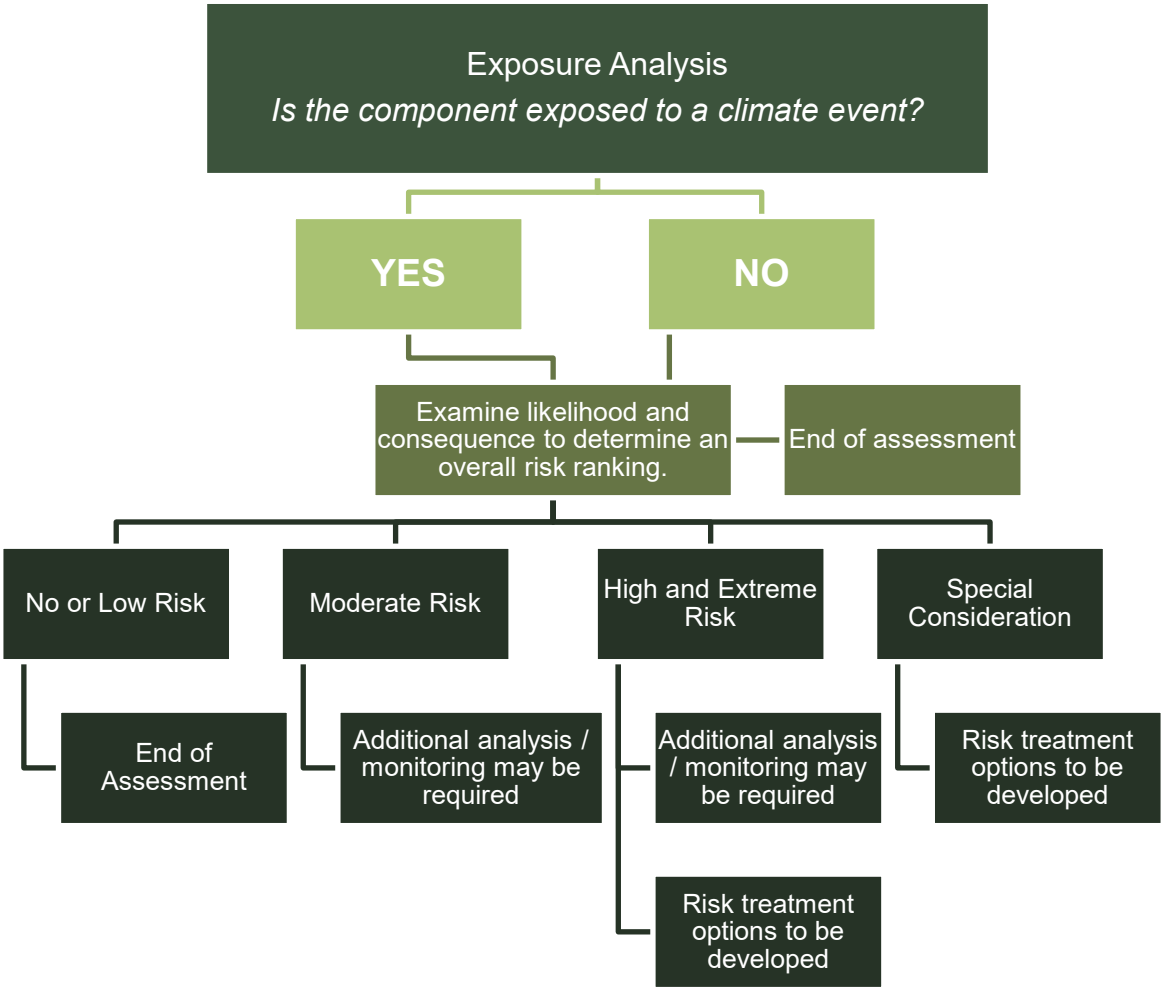

Table 4-1: Likelihood Rating Scale for the CCRA

Likelihood Range	Very Low (1)	Low (2)	Moderate (3)	High (4)	Very High (5)
Type of Event					
Event(s)	Not likely to occur in period (0% to 33%)	About as likely as not to occur in the period (33% to 66%)	Likely to occur in period (66% to 100%)	Very likely to occur in period (90% to 100%)	Virtually certain to occur in period (99% to 100%)

Using the ratings described above, **Table 4-2** presents the likelihood of occurrence associated with each climate event and the assigned likelihood rating. This scoring reflects considerations of the confidence associated with the availability, quantity, and level of agreement of the climate data.

Table 4-2: Likelihood Ratings for Identified Climate Events under Current and Future Climate Scenarios

Climate Events	Likelihood Rating (1 To 5)				
	Current Period	SSP2-4.5		SSP5-8.5	
		2050	2080	2050	2080
Extreme Heat	2	3	4	4	4
Heat Wave	1	2	3	3	4
Humidex	2	3	4	4	4
Extreme Cold	3	1	1	1	1
Cooling Degree Days	2	1	1	1	1
Coldest Day	2	1	1	1	1
Cold Spell Duration	2	1	1	1	1
Heating Degree Days	3	1	1	1	1
Icing Days	3	1	1	2	1
Extreme Precipitation (short duration, high intensity)	2	1	2	1	2
Max 1-day Total Precipitation	2	1	1	1	1
Winter Precipitation	4	2	1	2	1
High Wind	2	2	2	2	2

4.1.3 Consequence

To determine the relative risk rating for the Project components assessed in the CCRA, consequence ratings are needed. The consequence matrix in **Table 4-3** was developed for the CCRA with input from Capital Power. The consequence matrix includes the following impact categories: People, Environmental, Regulatory, Financial, and Production Loss. Impacts are evaluated according to a 5-point severity scale (very low to very high, as well as special considerations at both extremes) according to the descriptions for increasing severity of impacts (i.e., consequences) to the Project components assessed.

Table 4-3: Consequence Matrix

Consequence Category	Very Low (1)	Low (2)	Moderate (3)	High (4)	Very High (5)
People	Injury or illness requiring minimal intervention or first aid (e.g., slips trips and falls, heat exhaustion)	Minor injury for more than one person with potential time loss requiring professional medical attention and a return to normal duties within 3 days (e.g., slip due to ice or heat stroke, temporary exposure to poor air quality due to diesel vehicles starting up within a contained area)	Serious reportable event with potential time loss, or injuries requiring medical intervention for more than one person (e.g., requiring medical intervention or hospitalization for less than 24 hours, or ongoing medical treatment. All injuries reported to management)	Major injury (e.g., resulting in long-term disability or illness, or multiple serious reportable events)	One or more fatalities or permanent, incapacitating injury
Environmental	Events with minimal and reversible environmental impact occurring onsite at EWCC property (e.g., fire mitigated on site with fire suppression chemicals)	Events with minor and reversible environmental impacts that extend beyond EWCC property, with short-term effects on ecosystems (e.g., fire in the area requiring mitigation offsite of fire suppression chemicals)	Minor environmental damage over a widespread area (within and beyond EWCC property), or major environmental damage to ecosystems	Major environmental damage with widespread or long-term reversible effects on the ecosystem	Severe or sustained impact with widespread and serious effects on ecosystems. Effects are irreversible

Consequence Category	Very Low (1)	Low (2)	Moderate (3)	High (4)	Very High (5)
Regulatory	Events with minimal regulatory impact and minimal risk to the organization	Events with low impact that involve regulatory agencies typically in notification or awareness capacity	Events with moderate impact that involve regulatory agencies typically in notification or awareness capacity	Events with significant impact that trigger significant interest from regulatory agencies	Events with extensive interest and actions from regulatory agencies
Financial	Cost impacts such as damages to EWCC Assets or loss of revenue (one-time event<$50k or <$4k for a sustained event)	Cost impacts such as damages to EWCC Assets or loss of revenue (one-time event $50k-$500k or $4k-$40k for a sustained event)	Cost impacts such as damages to EWCC Assets or loss of revenue (one-time event $500k-$2m or $40k-$175k for a sustained event)	Cost impacts such as damages to EWCC Assets or loss of revenue (one-time event $2m-$10m or $175k-$1m for a sustained event)	Cost impacts such as damages to EWCC Assets or loss of revenue (one-time event >$10m or >$1m for a sustained event)
Production	Less than 10% loss of service capacity due to disruption	Loss of service capacity > 10% and < 20% due to a disruption	Loss of service capacity > 20% and < 30% due to a disruption	Loss of service capacity > 30% and < 40% due to a disruption	Loss of service capacity > 40% due to a disruption

4.1.4 Risk Ratings

Risks were defined for Project components based on exposure, likelihood, and consequence for each climate event and time horizon. The risk equation is intended to translate the defined climate indicator with its anticipated cause(s) and effects into a risk rating based on the product of the likelihood of the climate event and its highest consequence rating. The assessment expresses climate risk as:

Risk = Exposure of a Project Component x Likelihood of Climate Parameter x Consequence of Event

Each consequence was evaluated separately resulting in one or more risks for each component according to the climate hazards and time horizons. The risk matrix used for the CCRA is illustrated below in **Table 4-4**.

Table 4-4: Risk Assessment Matrix

Likelihood		Very Low (1)	Low (2)	Moderate (3)	High (4)	Very High (5)
Consequences	Very High (5)	Special Consideration	10	15	20	25
	High (4)	4	8	12	16	20
	Moderate (3)	3	6	9	12	15
	Low (2)	2	4	6	8	10
	Very Low (1)	1	2	3	4	Special Consideration

Risk ratings are assigned to each of the Project components for the current and future (2050 and 2080) time horizons based on their interaction with the climate events considered for the CCRA. For the CCRA, it was assumed that standard engineering controls, and health and safety procedures (e.g., occupational health and safety program, use of personal protective equipment) would be in place prior to the occurrence of individual, or cumulative climate events. Under this assumption, risk ratings were attributed accordingly based on the resilience of each Project component, and through professional judgement. Special consideration risks demonstrate a very high likelihood of occurrence, but very low consequence, or a very low likelihood of occurrence and very high consequence.

Table 4-5 describes the risk rating categories used for the CCRA.

Table 4-5: Risk Rating Categories

Risk Ratings	Categories
1 to 9	Low Risk: No to minimal action needed
10 to 16	Moderate Risk: May need future action
20 to 25	High Risk: Action recommended

4.2 Risk Profile

Using the risk assessment process described above, an overall climate risk profile was created for the Project under current and future climate conditions, **Table 4-6**.

4.2.1 Quantitative Climate Risk Profile

A quantitative climate risk profile was created for those Project components with an identified potential exposure to climate events with assigned likelihood values. The quantitative climate risk profile considers the climate events identified in **Table 4-2** that had sufficient data available to identify reliable likelihood ratings with reasonable confidence.

Low to moderate risks were identified for the Project components considered in the CCRA.

While the Project lifespan is expected to conclude before the end 2050s time period (2041-2070), risks were also projected for the 2080s time period (2071-2100).

These extended projections consider the possibility of the extension of the Project as well as provide insight into the potential severity of climate-related impacts, should shifts and increases in temperature and precipitation occur earlier than anticipated.

Moderate risks under SSP5-8.5 scenario are associated with:

- Extreme Heat, Heat Waves, and Humidex environmental and financial risk Interactions with Gas Turbine Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex environmental and risk Interactions with Generator Step-up Transformer (GSU) Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex environmental risk interactions with Oil Water Separator Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex environmental risk interactions with (User Acceptance Testing) UAT Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex financial risk interactions with Generator Circuit Breaker Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex Financial and Risk interactions with Generator Step-up Transformer (GSU) Infrastructure by 2050;
- Extreme Heat, Heat Waves, and Humidex Financial and Risk Interactions with UAT Infrastructure by 2050.

The SSP2-4.5 scenario produced a similar risk profile apart from:

- No moderate environmental risks associated with Heat waves for Gas Turbine, Generator Step-up Transformer, Oil Water Separator, and User Acceptance Testing infrastructure;
- No moderate environmental risk associated with Extreme Heat and Humidex by the 2050s time period for Gas Turbine, Generator Step-up Transformer, Oil Water Separator, and User Acceptance Testing infrastructure (Moderate risks still associated with 2080s time period);
- No moderate financial risk associated with Extreme Heat and Humidex by the 2050s time period for Generator Circuit Breaker infrastructure (Moderate risks still associated with 2080s time period);
- No moderate environmental risks associated with Heat waves for Generator Circuit Breaker infrastructure;
- No moderate financial risks associated with Heat Waves by the 2050s time period for Generator Step-up Transformer and User Acceptance Testing infrastructure (Moderate risks still associated with 2080s time period).

Several climate events including tornadoes, and high wind events required special consideration based on the high potential risk (consequence) to the Project. Although high consequences are associated with these special consideration events, these events have a low likelihood of occurrence based on geographical factors, documented historical occurrences, and modeled data.

No high risks were identified during the CCRA for current or future climate change under SSP2-4.5 and SSP5-8.5 scenarios.

For the complete climate change risk profile for the Project, see **Appendix C**.

Table 4-6: Climate Risk Profile – Moderate Risks Under SSP5-8.5

Climate Events	Project Component Exposed	Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating]	Impacts and Consequences
		Current Climate	2050	2080		
Extreme Heat (Days with Tmax > 30°C)	Gas Turbine	6	12	12	Environmental [3] Financial [3]	Effect of heat on the function of the Gas Turbine may result in increased consumption of coolant, and lubricants with risk for spills/leaks/seepage requiring remediation (on-site impacts); potential impact to air quality if the turbine operating under increased load which could impact the wider area.
	GCB	6	12	12	Financial [3]	High temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	6	12	12	Environmental [3]	Effect of heat on the function of GSU may result in increased consumption of coolant, and lubricants with risk for spills/leaks/seepage requiring remediation (on-site impacts); potential impact to air quality if turbine operating under increased load which could impact the wider area.
	Generator Step-up Transformer (GSU)	8	16	16	Financial [4]	High temperatures can impact the efficiency of electrical components.
	Oil-water Separator (OWS)	6	12	12	Environmental [3]	The effect of heat on the function of OWS may result in increased consumption of coolant and lubricants with risk for spills/leaks/seepage requiring remediation (on-site impacts).
	User Acceptance Testing (UAT)	6	12	12	Environmental [3]	Effect of heat on the function of UAT may result in increased consumption of coolant, and lubricants with risk for spills/leaks/seepage requiring remediation (on-site impacts); potential impact to air quality if turbine operating under increased load which could impact the wider area.
	User Acceptance Testing (UAT)	8	16	16	Financial [4]	Higher ambient temperatures can reduce the cooling efficiency and current carrying capacity of UATs, as well as increase the losses and aging of the transformer insulation.

Climate Events	Project Component Exposed	Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating]	Impacts and Consequences
		Current Climate	2050	2080		
Heat Waves (Times/ Yr)	Gas Turbine	3	9	12	Environmental [3]	Effect of heat on the function of Gas Turbine may result in increased consumption of coolant and lubricants with risk for spills/leaks/seepage requiring remediation (on-site impacts): potential impact to air quality if turbine operating under increased load which could impact the wider area.
	Generator Circuit Breaker (GCB)	3	9	12	Financial [3]	High temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	3	9	12	Environmental [3]	Effect of heat on the function of GSU may result in increased consumption of coolant, and lubricants with risk for spills/leaks/seepage requiring remediation (on-site impacts); potential impact to air quality if turbine operating under increased load which could impact the wider area.
	High temperatures can impact the efficiency of electrical components	4	12	16	Financial [4]	High temperatures can impact the efficiency of electrical components.
	Oil-water Separator (OWS)	3	9	12	Environmental [3]	The effect of heat on the function of OWS may result in increased consumption of coolant and lubricants with risk for spills/leaks/seepage requiring remediation (on-site impacts).
	User Acceptance Testing (UAT)	3	9	12	Environmental [3]	Effect of heat on the function of UAT may result in increased consumption of coolant, and lubricants with risk for spills/leaks/seepage requiring remediation (on-site impacts); potential impact to air quality if turbine operating under increased load which could impact the wider area.

Climate Events	Project Component Exposed	Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating]	Impacts and Consequences
		Current Climate	2050	2080		
Heat Waves (Times/ Yr)	User Acceptance Testing (UAT)	4	12	16	Financial [4]	Higher ambient temperatures can reduce the cooling efficiency and current carrying capacity of UATs, as well as increase the losses and aging of the transformer insulation.
Humidex (Days with Humidex > 35°C)	Gas Turbine	6	12	12	Environmental [3]	Effect of heat on the function of Gas Turbine may result in increased consumption of coolant and lubricants with risk for spills/leaks/seepage requiring remediation (on-site impacts): potential impact to air quality if turbine operating under increased load which could impact the wider area Increases in humidity.
	Generator Circuit Breaker (GCB)	6	12	12	Financial [3]	High temperatures can impact the efficiency of electrical components.
	Generator Step-up Transformer (GSU)	6	12	12	Environmental [3]	Effect of heat on the function of GSU may result in increased consumption of coolant, and lubricants with risk for spills/leaks/seepage requiring remediation (on-site impacts); potential impact to air quality if turbine operating under increased load which could impact the wider area.
	Generator Step-up Transformer (GSU)	8	16	16	Financial [4]	High temperatures can impact the efficiency of electrical components.
	Oil-water Separator (OWS)	6	12	12	Environmental [3]	The effect of heat on the function of OWS may result in increased consumption of coolant and lubricants with risk for spills/leaks/seepage requiring remediation (on-site impacts).
	User Acceptance Testing (UAT)	6	12	12	Environmental [3]	Effect of heat on the function of UAT may result in increased consumption of coolant, and lubricants with risk for spills/leaks/seepage requiring remediation (on-site impacts); potential impact to air quality if turbine operating under increased load which could impact the wider area.
	User Acceptance Testing (UAT)	8	16	16	Financial [4]	Higher ambient temperatures can reduce the cooling efficiency and current carrying capacity of UATs, as well as increase the losses and aging of the transformer insulation.

4.2.2 Qualitative Climate Risk Profile

Risks were assessed qualitatively where climate data for the selected climate event were insufficient to assign a reliable likelihood rating with reasonable degrees of confidence (**Table 4-7**). The following climate hazards identified for the CCRA were considered qualitatively:

- Flooding – Pluvial;
- Flooding – Fluvial (single event);
- Tornado (single event).

While quantitative risk ratings could not be assigned for these climate hazards, **Table 4-7** presents the potential impacts and consequences for each Project component.

Table 4-7: East Windsor Facility Expansion Qualitative Climate Risk Profile

Climate Events	Qualitative Risk Rating	Component Affected	Component Performance Affected	Impacts and Consequences
Flooding – Pluvial	Low to Moderate	All Project Components Excluding PEECC	People Environmental Regulatory Financial Production	• Potential site shut-down due to localized flooding of Project components. • Potential impacts to the environment from uncontrolled release of contaminants (e.g., oil, lubricants) requiring remediation. • Site shutdown resulting in regulatory, financial, and production impacts.
Flooding – Fluvial	Low	All Project Components Excluding PEECC	People Environmental Regulatory Financial Production	• Potential site shut-down due to localized flooding of Project components. • Potential impacts to the environment from uncontrolled release of contaminants (e.g., oil, lubricants) requiring remediation. • Site shutdown resulting in regulatory, financial, and production impacts
Tornado	Low	All Project Components Excluding PEECC and Underground Stormwater Tank	People Environmental Regulatory Financial Production	• Potential for significant damage to project infrastructure • Major safety risk to on-site workers

4.2.2.0 Flooding – Pluvial Risks

The Project site is located approximately 140 m south of the Detroit River. There are no natural surface water features within the Project site. The site is covered by grass and includes paved asphalt, a gravel road, and formerly a metal Quonset hut (removed at the City's request) (Sargent and Lundy 2023). The site is relatively flat, with elevations of 181.3 m in the southeast to 179.0 m in the northwest. The site drains by sheet flow to the north and west, with a natural flow into the Detroit River (Sargent and Lundy 2023). However, stormwater within the Project Site drains to the existing stormwater management system and then point of release to the city infrastructure.

The existing EWCC has a stormwater management (SWM) system that consists of onsite storm sewers, oil/grit separators, gulley traps, catch basins, and manholes. On-site there is an existing underground stormwater storage tank with a storage capacity of 424 cubic metres (m^3) located at the northeast corner of the EWCC facility, within the proposed Project site (MOE 2008). The system collects stormwater runoff from the EWCC facility roof drains, road, as well as operational and parking areas to convey it to municipal storm sewer inlets located along Cadillac Street and Riverside Drive East. The EWCC site is subject to the conditions of an Amended Environmental Compliance Approval (ECA) – Industrial Sewage (MEPC 2008), formerly identified as Certificate of Approval (CofA) (Industrial Sewage Works).

The Canadian Disaster Database (CDD) operated by Public Safety Canada was consulted to determine if significant fluvial flooding events have occurred in proximity to the Project site over the past 100 years (1923 to 2023). The CDD tracks significant disaster events that conform to the Emergency Management Framework for Canada. The CDD reported two significant flooding events during this time period. One took place on September 29, 2016, when 78 mm of rain fell within a 24-hour time period, as reported at the Windsor Airport meteorological station. The event resulted in residential damage including flooded basements and major road closures due to pluvial flooding (Public Safety Canada 2023). The other reported event occurred on August 28-30, 2017, when over 222 mm of rain fell southwest of Windsor in less than a 48-hour period; this flood impacted thousands of residents as well as public facilities and businesses. Insurance payouts from this event totaled over $173 million (Public Safety Canada 2023).

Low risks were determined quantitatively for the underground stormwater storage tank for people (i.e., health and safety), environmental, regulatory, financial, and production factors as a result of extreme precipitation. However, if the tank exceeds capacity during extreme precipitation events, it may result in an uncontrolled release (i.e., backflow) of collected stormwater and other on-site contaminants (i.e., pluvial flooding). Based on the results of a Stormwater Management Calculation report (Black and Veatch 2024) completed for the Project, a stormwater tank of at least 280 m^3 is needed to accommodate the current 100-year return period for extreme precipitation (proposed Project area only). This required volume for the underground stormwater storage tank was determined based on the IDF data presented in the Stormwater Management Report prepared by Sargent and Lundy (2023) report (i.e., 61 mm/hr for the 1-hr 100 year return period), which is in agreement with the results presented in the CCRA for the current period. However, climate change was not considered in the report to determine how the return period for the current 100-year extreme precipitation values will change over the lifespan of the project under future climate change scenarios. Based on the results of the CCRA, by 2050 the 1-hr extreme precipitation for the 100 year return period will be 74 to 76 mm/hr (under SSP2-4.5 and SSP5-8.5 respectively), an approximate 25% increase in mm/hr from the current period.

The current volume of the existing underground stormwater storage tank, and the volume of the proposed underground stormwater storage tank should be re-evaluated under multiple climate change scenarios for the 1-hr extreme precipitation for the 100 year return period. This re-evaluation could be considered as part of Capital Power's asset management prior to 2050 to ensure adequate capacity is available to manage stormwater flows for the Project area.

Pluvial flooding was considered to pose a moderate risk given that the potential backflow and discharge of water from pluvial flooding (by exceeding the available capacity of the existing or planned underground stormwater storage tank) could result in some flooding of the site.

4.2.2.1 Flooding – Fluvial Risks

The Essex Region Conservation Authority (ERCA) has produced flood mapping for the region (ERCA 2023). The ERCA mapping shows that the Project area is >100 m to the south of the 1:100-year flood line or the maximum historical observed flood line for the Detroit River.

The flood map viewer developed by Simonovic et al. (2021) indicates exposure to modeled floodwaters from the Detroit River under current conditions as well as CMIP6 SSP2-4.5, and SSP5-8.5 scenarios for the 100-year, and 200-year flood return period from 2020-2060, and 2061 to 2100. However, these data are not in agreement with the localized data prepared by the ERCA for the 100-year return period. In Simonovic et al. (2021), the raster cell size used to represent flooding is approximately 1,000 m by 800 m. The projection of the model onto aerial imagery in the program does not completely conform with the current channel of the Detroit River but generally conforms with its path. Given the distance to the Detroit River (>100 m), and the gentle downward slope of the site towards the Detroit River, the Project is considered to be at a low risk of fluvial flooding based on the 1:100-year flood return period. However, given the high consequences fluvial-flooding would have at the Project site, additional studies incorporating digital elevation models, current and future flow volumes, and speeds under climate change scenarios SSP2.4-5 and SSP5.8-5 would confirm the relative risk of fluvial flooding to the Project.

4.2.2.2 Tornadoes

Based on available data, tornadoes are considered to have a low potential for exposure (interaction) with the Project Site based on readily available data and historical records. However, tornadoes have a high to very high consequence rating for all consequence categories considered for the Project, thereby falling into the "special consideration" category according to the risk ratings illustrated in **Table 4-4**.

The CDD was consulted to determine if significant tornado events have occurred in proximity to the Project over the past 100 years (1923 to 2023). The CDD reports three significant tornado events during this period (Public Safety Canada 2023):

1. June 17, 1946, a tornado formed in Windsor and went as far as Tecumseh, ON, resulting in 17 fatalities, with hundreds of others injured, and over 400 homes, 150 barns, and farm buildings damaged or destroyed.
2. April 3, 1974, a tornado event took place in Windsor, ON, resulting in nine fatalities and 30 others injured.
3. August 20, 2009, a combined tornado event occurred simultaneously in the Toronto, Windsor, and Newmarket, ON areas (i.e., 19 tornadoes were produced in a single day), resulting in one fatality and over 600 homes damaged (Public Safety Canada 2023).

Additionally, lower severity tornado events (EF0 to EF1) have occurred in the Windsor area (within in 10 km of the Project) in recent history.

- On June 10, 2020, tree damage reported at several locations in Windsor as well as LaSalle following a storm passing through the area (NTP 2024). The event was assessed as a downburst, causing damage with estimated max wind speed 115 km/h) (NTP 2024);
- On July 24, 2021, tree and minor roof damage to houses was reported in Windsor following a storm passing through the area (NTP 2024). A co-located velocity couplet was seen by radar during this event (NTP 2024). An NTP surveyor completed a ground and drone survey on July 27, 2021, and the damage assessed as EF0 tornado, with an estimated max. wind speed of 125 km/h, track length of 2.35 km and max. path width of 350 m (NTP 2024);
- On August 29, 2022, structural and tree damage was reported in Windsor following a storm passing through the area (NTP 2024). Minor roof damage to several business was reported and multiple trees were snapped or uprooted (NTP 2024). No injuries were reported (NTP 2024). Damage assessed as EF0 downburst, with an estimated max. wind speed of 130 km/h (NTP 2024);
- On June 25, 2023, video captured a rotating dust cloud and lofted debris in western Windsor as a storm approached, with tree damage later reported in the immediate vicinity of the visible vortex (NTP 2024). No injuries were reported (NTP 2024). An NTP ground and drone survey was completed on June 26, 2023 documenting a narrow path of weak tree damage (NTP 2024). Damage assessed as EF0 tornado, with an estimated maximum wind speed of 90 km/h, track length of 2.02 km and a maximum path width of 180 m (NTP 2024);
- On August 24, 2023, two tornadoes (an EF0 and an EF1) hit Windsor and Tecumseh simultaneously (NTP 2024; CBC 2023). Recent statistical analysis suggests that significant tornado events are occurring later in the year in Southern Ontario (Sills et al. 2022).

Tornadoes have the potential to cause significant damage to exposed Project components particularly if there is a direct strike (EPRI 2023). High winds associated with tornadoes may impact reliable operation of gas turbines due to the air ingestion requirements (EPRI 2023).

4.2.2.3 High Winds

Quantitative data are available for high winds under the future climate change scenarios considered for the Project. However, the latest climate change general circulation model (GCM) modeling in IPCC AR6 indicates that there is only “medium” confidence in the prediction that changes in extreme wind speeds will be “limited” (Senevirantne et al. 2021). Further, future changes in the location of storm tracks might lead to substantial changes in local extreme wind speeds. Therefore, although changes in future extreme wind speeds might be “limited”, there would still be some occasions with local higher wind speeds than the current average, albeit at low probabilities.

4.3 Results Summary

Although the Project as a whole will be exposed to climate events, the risk assessment concluded that these interactions pose no consequence for a majority of the Project components (**Appendix C**). Therefore, a consequence rating of "0" was applied, resulting in no risk rating for applicable Project components relative to the identified climate hazards.

Moderate risks were identified through the quantitative climate risk assessment for two Project components:

- Extreme Heat, Heat Waves, and Humidex environmental and financial risk Interactions with Gas Turbine Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex environmental and risk Interactions with Generator Step-up Transformer (GSU) Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex environmental risk interactions with Oil Water Separator Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex environmental risk interactions with UAT Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex financial risk interactions with Generator Circuit Breaker Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex Financial and Risk interactions with Generator Step-up Transformer (GSU) Infrastructure by 2050;
- Extreme Heat, Heat Waves, and Humidex Financial and Risk Interactions with UAT Infrastructure by 2050.

No high risks were identified for any Project components under current or future climate change scenarios.

Impacts and consequences for climate hazards that could not be determined quantitatively were considered qualitatively in the CCRA. Fluvial flooding and pluvial flooding were considered to pose a low and moderate level of risk to the Project (all components), respectively.

Special consideration was given to tornadoes and high winds. Risks to Project components were considered to be low for tornadoes and for high winds.

In general, it is expected Southern Ontario will experience much higher amounts of rainfall as well as rising temperatures that will contribute to increased regional humidity (Song et al.2022). Additionally, increased humidity is known to affect the performance of high-efficiency gas turbines. While potential impacts were identified during the CCRA, it is expected that, in general, low to moderate risks will be sufficiently mitigated with planned and routine operations and maintenance procedures.

5.0 Risk Treatment

The results of this CCRA serve as a benchmark report for the Project and can be used for future planning during its life cycle. Over the Project's life, up-to-date climate change models should be reviewed to reevaluate the risk ratings and climate hazards identified in the CCRA.

The severity of the potential consequences posed by identified climate hazards can be mitigated to a large extent by adherence to prevailing engineering design standards and the application of standard operation and maintenance (O&M) procedures, health and safety practices, as well as emergency risk management plans.

Moderate risks identified for the current and future effects of climate change (i.e., heat-related events, and flooding-pluvial) may warrant site-specific considerations for component design and their related O&M practices.

The CCRA concluded that pluvial flooding poses a moderate risk to the Project, while fluvial flooding poses a low risk. Additional flood risk assessments may be warranted to validate the qualitative evaluation of flooding in the CCRA.

As per the risk assessment framework used in this CCRA, Project components with no or low risks were not considered for risk treatment or adaptation.

The adaptation measures presented in **Table 5-1** are provided for Capital Power's consideration to enhance the existing controls and planning measures being developed for the Project in response to the moderate risks identified during the CCRA.

Table 5-1: Adaptation Measures by Project Component

Project Component	Climate Events	Asset Performance Affected	Adaptation Measures
Gas Turbine	Extreme Heat Heat Waves Humidex	Environmental Financial	• Increase frequency of site inspections after periods of extreme heat to inspect for leaks; • Additions to site management plan to reduce excess use of coolants and lubricants; • Use of alternative coolants and lubricants with less potential for environmental impact; • Upgrade to filtration system to offset air quality impacts from increased load; • Increased humidity promotes corrosion and can lead to sudden pressure spikes if filtration systems protecting the turbine suddenly become blocked, potentially requiring higher levels of maintenance or replacement; • Higher ambient air temperature can result in lower gas turbine efficiency, which would need to be offset through media selection for various turbine components.

Project Component	Climate Events	Asset Performance Affected	Adaptation Measures
GCB	Extreme Heat Heat Waves Humidex	Financial	• Monitor impacts on efficiency/operation of infrastructure.
GSU	Extreme Heat Heat Waves Humidex	Environmental Financial	• Increase frequency of site inspections after periods of extreme heat to inspect for leaks; • Additions to site management plan to reduce excess use of coolants and lubricants; • Use of alternative coolants and lubricants with less potential for environmental impact; • Monitor impacts on efficiency/operation of infrastructure.
Oil-water Separator	Extreme Heat Heat Waves Humidex	Environmental	• Increase frequency of site inspections after periods of extreme heat to inspect for leaks; • Additions to site management plan to reduce excess use of coolants and lubricants; • Use of alternative coolants and lubricants with less potential for environmental impact.
UAT	Extreme Heat Heat Waves Humidex	Environmental Financial	• Additions to site management plan to reduce excess use of coolants and lubricants; • Use of alternative coolants and lubricants with less potential for environmental impact; • Monitor impacts on efficiency/operation of infrastructure.
All (excluding PEECC)	Flooding – Pluvial	People Environmental Regulatory Financial Production	• Evaluate volume/capacity of underground stormwater tanks under future climate scenarios to ensure sufficient capacity is available.

6.0 Summary of Findings

No high risks were determined for the Project based on the climate indicators considered in the CCRA.

While the Project lifespan is expected to conclude before the end of the 2050s time period (2041-2070), risks were also projected for the 2080s time period (2071-2100). These extended projections consider the possibility of the extension of the Project as well as provide insight into the potential severity of climate-related impacts should shifts and increases in temperature and precipitation occur earlier than anticipated.

Moderate risks under SSP5-8.5 scenario are associated with:

- Extreme Heat, Heat Waves, and Humidex environmental and financial risk Interactions with Gas Turbine Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex environmental and risk Interactions with Generator Step-up Transformer (GSU) Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex environmental risk interactions with Oil Water Separator Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex environmental risk interactions with (User Acceptance Testing) UAT Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex financial risk interactions with Generator Circuit Breaker Infrastructure by 2080 (2050 and 2080 for Extreme Heat and Humidex);
- Extreme Heat, Heat Waves, and Humidex Financial and Risk interactions with Generator Step-up Transformer (GSU) Infrastructure by 2050;
- Extreme Heat, Heat Waves, and Humidex Financial and Risk Interactions with UAT Infrastructure by 2050.

The SSP2-4.5 scenario produced a similar risk profile apart from:

- No moderate environmental risks associated with Heat waves for Gas Turbine, Generator Step-up Transformer, Oil Water Separator, and User Acceptance Testing infrastructure;
- No moderate environmental risk associated with Extreme Heat and Humidex by the 2050s time period for Gas Turbine, Generator Step-up Transformer, Oil Water Separator, and User Acceptance Testing infrastructure (Moderate risks still associated with 2080s time period);
- No moderate financial risk associated with Extreme Heat and Humidex by the 2050s time period for Generator Circuit Breaker infrastructure (Moderate risks still associated with 2080s time period);
- No moderate environmental risks associated with Heat waves for Generator Circuit Breaker infrastructure;

- No moderate financial risks associated with Heat Waves by the 2050s time period for Generator Step-up Transformer and User Acceptance Testing infrastructure (Moderate risks still associated with 2080s time period).

Flooding (both pluvial and fluvial) was considered qualitatively, along with tornadoes and high winds which received special consideration for the Project given the very high consequences these events generally create:

- Fluvial flooding was considered to have a low potential for interaction with the Project site based on the site's physiography, historical records, and available flood model data under the 1:100 year return period;
- Pluvial flooding was considered to have a moderate risk due to the potential for stormwater to backflow onto the Project site during future extreme precipitation events that may exceed the capacity of the underground stormwater tank;
- While tornadoes have occurred in the Windsor area, their likelihood of occurrence and their potential interaction with the Project is considered to be low.

Resiliency Statement: The CCRA for the Project considered a wide range of climate events that in the professional judgement of the CCRA team involved could negatively impact the Project. The CCRA was prepared using the best available information and globally accepted models of climate change (i.e., SSP2-4.5 and SSP5-8.5), as well as reliable sources for historical meteorological data. The risk assessment completed for the CCRA is aligned with ISO 31000 Risk Management Principles and follows the PIEVC HLSG framework.

The findings of the CCRA conclude the Project is considered to be resilient to current and future climate events that may interact with the Project elements during its lifespan (25+ years). Overall, the design of the Project and its respective components are expected to limit the negative effects of climate events. Additionally, normal operation and maintenance procedures, health, and safety practices, as well as emergency risk management, are expected to adequately limit the current and future effects of climate change before high to very high consequences occur at the Project Site.

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Appendix A East Windsor Facility Expansion Project Layout

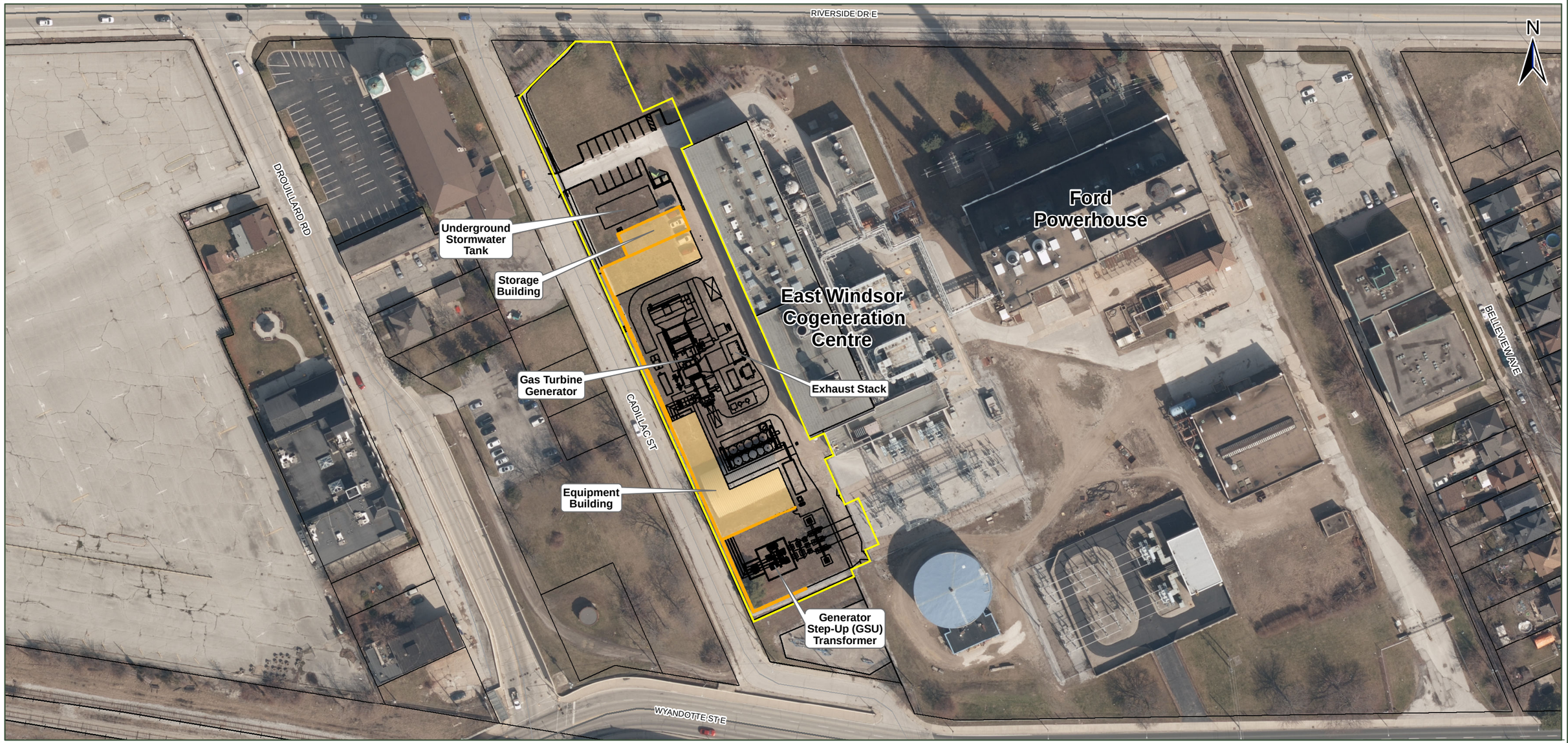
Climate Change Resilience Assessment

East Windsor Generation Facility Expansion Project

Capital Power Corporation

SLR Project No.: 241.030524.00024

July 2024



LEGEND:

- Project Site
- New Building
- New Building
- Equipment Layout
- Parcel Fabric (City of Windsor)
- Railway

NOTES:
PARCEL FABRIC, CITY OF WINDSOR OPEN DATA CATALOGUE, ACCESSED NOVEMBER, 2022.
IMAGERY: COUNTY OF ESSEX; 2023

0 10 20 40 60 m

SCALE 1:1,250
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

EAST WINDSOR GENERATION
FACILITY EXPANSION
224 CADILLAC DRIVE, WINDSOR ONTARIO

CLIMATE CHANGE RESILIENCE ASSESSMENT

PROJECT SITE LAYOUT

SLR

FIGURE NO:
A-1

DATE: July, 2024

PROJECT NO: 241.30524.00024

Appendix B Exposure Analysis

Climate Change Resilience Assessment

East Windsor Generation Facility Expansion Project

Capital Power Corporation

SLR Project No.: 241.030524.00024

July 2024

Table B-1: Exposure of Project Components to Climate Hazards

Project Component	Underground Storm Water Tank	Parking	Noise Wall	Storage Structure	PEECC	Gas Compressor Enclosure	Inlet Air Filter	Gas Turbine	Exhaust Stack	Fin Fan Cooler	Generator	GCB	GSU	Switchyard Expansion	OWS	IBD	UAT
Temperature																	
Extreme Heat	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Heat Wave	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Humidex	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Extreme Cold	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Coldest Day	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cold Spell Duration	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Heating Degree Days	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cooling Degree Days	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Icing Days	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Precipitation																	
Extreme Precipitation (short duration, high intensity)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Max 1-day Total Precipitation	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Winter Precipitation	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Climate Parameters																	
Flooding – Pluvial	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Flooding – Fluvial	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tornadoes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
High Wind	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix C Climate Change Risk Profile

Climate Change Resilience Assessment

East Windsor Generation Facility Expansion Project

Capital Power Corporation

SLR Project No.: 241.030524.00024

July 2024

Table C-1: Climate Risk Profile – People

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Heat (Days with Tmax > 30°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	2	3	4	2	4	4	1	Extreme heat events can enhance the urban heat island effect and lead to potential heat-related health impacts
	Noise Wall	2	3	4	2	4	4	1	Extreme heat events could lead to unsuitable working conditions due to partial enclosure
	Storage Structure (Turbine Storage)	2	3	4	2	4	4	1	Extreme heat events could lead to unsuitable working conditions due to enclosed working area
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	3	4	2	4	4	1	Extreme heat events could lead to unsuitable working conditions due to enclosed working area
	Gas Compressor Enclosure	2	3	4	2	4	4	1	Extreme heat events could lead to unsuitable working conditions due to enclosed working area
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	2	3	4	2	4	4	1	Extreme heat events could lead to unsuitable working conditions due to enclosed working area
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	Generator Circuit Breaker (GCB)	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Heat (Days with Tmax > 30°C)	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	User Acceptance Testing (UAT)	0	0	0	0	0	0	0	ND
Heat Waves (Times/ Yr)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	1	2	3	1	3	4	1	Heat waves could potentially lead to heat-related health impacts
	Noise Wall	1	2	3	1	3	4	1	Heat waves could potentially lead to heat-related health impacts
	Storage Structure (Turbine Storage)	1	2	3	1	3	4	1	Heat waves could potentially lead to heat-related health impacts
	Packaged Electronic and Electrical Control Compartment (PEECC)	1	2	3	1	3	4	1	Heat waves could potentially lead to heat-related health impacts
	Gas Compressor Enclosure	0	0	0	0	0	0	NE	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	1	2	3	1	3	4	1	Heat waves could potentially lead to heat-related health impacts
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	Generator Circuit Breaker (GCB)	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Switchyard Expansion	0	0	0	0	0	0	0	ND
Heat Waves (Times/ Yr)	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	User Acceptance Testing (UAT)	0	0	0	0	0	0	0	ND
Humidex (Days with Humidex > 35°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	2	3	4	2	4	4	1	High humidex levels could potentially lead to heat-related health impacts
	Noise Wall	2	3	4	2	4	4	1	High humidex levels could potentially lead to heat-related health impacts
	Storage Structure (Turbine Storage)	2	3	4	2	4	4	1	High humidex levels could potentially lead to heat-related health impacts
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	4	0	0	4	1	High humidex levels could potentially lead to heat-related health impacts
	Gas Compressor Enclosure	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	User Acceptance Testing (UAT)	0	0	0	0	0	0	0	ND
Extreme Cold (Days with Tmin < -15°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	2	1	1	2	1	1	1	Extreme Cold events could lead to unsuitable working conditions
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	User Acceptance Testing (UAT)	0	0	0	0	0	0	0	ND
CDD	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	2	1	1	2	1	1	1	Cold events could lead to unsuitable working conditions
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	User Acceptance Testing (UAT)	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Coldest Day	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	NE	ND
	Noise Wall	0	0	0	0	0	0	NE	ND
	Storage Structure (Turbine Storage)	2	1	1	2	1	1	1	Very cold days could lead to unsuitable working conditions
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	User Acceptance Testing (UAT)	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Cold Spell Duration	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	2	1	1	2	1	1	1	Prolonged cold days could lead to unsuitable working conditions
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	User Acceptance Testing (UAT)	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
HDD	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	3	1	1	3	1	1	1	Heat waves could potentially lead to heat-related health impacts
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	User Acceptance Testing (UAT)	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Icing Days	Underground Storm Water Tank	0	0	0	0	0	0	0	ND
	Parking	3	1	1	3	2	1	1	Icing could increase slip and fall hazards
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	3	1	1	3	2	1	1	Icing could increase slip and fall hazards
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	User Acceptance Testing (UAT)	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Precipitation (short duration, high intensity) (1-hr, 100-year return in mm/hr)	Underground Storm Water Tank	2	1	2	2	1	2	1	Overloading of stormwater tank could lead to unsafe work conditions
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	4	2	4	4	2	4	2	High precipitation events could lead to unsuitable working conditions around electrical equipment
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	4	2	4	4	2	4	2	High precipitation events could lead to unsuitable working conditions around electrical equipment
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Precipitation (short duration, high intensity) (15min, 100-year return in mm/hr)	Underground Storm Water Tank	2	1	2	2	1	2	1	Overloading of stormwater tank could lead to unsafe work conditions
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	4	2	4	4	2	4	2	High precipitation events could lead to unsuitable working conditions around electrical equipment
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	4	2	4	4	2	4	2	High precipitation events could lead to unsuitable working conditions around electrical equipment
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Max 1-day Total Precipitation (mm/day)	Underground Storm Water Tank	2	1	1	2	1	1	1	Overloading of stormwater tank could lead to unsafe work conditions
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	4	2	2	4	2	2	2	High precipitation events could lead to unsuitable working conditions around electrical equipment
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Winter Precipitation (snowfall records)	Underground Storm Water Tank	0	0	0	0	0	0	0	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: People]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
High Wind (km/hr, 50-year return)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND
Notes: ND, not determined									

Table C-2: Climate Risk Profile - Environmental

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Heat (Days with Tmax > 30°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	3	4	2	4	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Gas Compressor Enclosure and Cooler	2	3	4	2	4	4	1	Effect of heat on function resulting in increased consumption of coolant, lubricants
	Inlet Air Filter	4	6	8	4	8	8	2	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas. Higher site temperature may lead to high humidity which leads to an increase in corrosion.
	Gas Turbine	6	9	12	6	12	12	3	The effect of heat on the function of the turbine may result in increased consumption of coolant, and lubricants (on-site impacts) and; a potential impact on air quality if the turbine operates under increased load which could impact the wider area
	Exhaust Stack	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Fin Fan Cooler	2	3	4	2	4	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
Extreme Heat (Days with Tmax > 30°C) cont'd	Generator	2	3	4	2	4	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	GCB	2	3	4	2	4	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Generator Step-up Transformer (GSU)	6	9	12	6	12	12	3	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Switchyard Expansion	2	3	4	2	4	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Oil-water Separator (OWS)	6	9	12	6	12	12	3	The effect of heat on the function of OWS may result in increased consumption of coolants, and lubricants (on-site impacts)
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	6	9	12	6	12	12	3	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
Heat Waves (Times/ Yr)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Packaged Electronic and Electrical Control Compartment (PEECC)	1	2	3	1	3	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
Heat Waves (Times/ Yr) cont'd	Gas Compressor Enclosure and Cooler	1	2	3	1	3	4	1	Effect of heat on function resulting in increased consumption of coolant, lubricants
	Inlet Air Filter	2	4	6	2	6	8	2	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Gas Turbine	3	6	9	3	9	12	3	The effect of heat on the function of the turbine may result in increased consumption of coolant, and lubricants (on-site impacts) and; a potential impact on air quality if the turbine operates under increased load which could impact the wider area
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	1	2	3	1	3	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Generator	1	2	3	1	3	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	GCB	1	2	3	1	3	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Generator Step-up Transformer (GSU)	3	6	9	3	9	12	3	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Switchyard Expansion	1	2	3	1	3	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Oil-water Separator (OWS)	3	6	9	3	9	12	3	The effect of heat on the function of OWS may result in increased consumption of coolants, and lubricants (on-site impacts)
Heat Waves (Times/ Yr) cont'd	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	3	6	9	3	9	12	3	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
Humidex (Days with Humidex > 35°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	3	4	2	4	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Gas Compressor Enclosure and Cooler	2	3	4	2	4	4	1	Effect of heat on function resulting in increased consumption of coolant, lubricants
	Inlet Air Filter	2	3	4	2	4	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Gas Turbine	6	9	12	6	12	12	3	The effect of heat on the function of the turbine may result in increased consumption of coolant, and lubricants

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
									(on-site impacts); a potential impact on air quality if the turbine operates under increased load which could impact the wider area
	Exhaust Stack	0	0	0	0	0	0	0	ND
Humidex (Days with Humidex > 35°C)	Fin Fan Cooler	2	3	4	2	4	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Generator	2	3	4	2	4	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	GCB	2	3	4	2	4	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Generator Step-up Transformer (GSU)	6	9	12	6	12	12	3	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Switchyard Expansion	2	3	4	2	4	4	1	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas
	Oil-water Separator (OWS)	6	9	12	6	12	12	3	The effect of heat on the function of OWS may result in increased consumption of coolants, and lubricants (on-site impacts)
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	6	9	12	6	12	12	3	High temperatures could lead to increased use of coolant fluids that may spread to surrounding areas

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Cold (Days with Tmin < -15°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	6	3	3	6	3	3	3	Cold temperatures could lead to increased use of deicing fluids that may spread to surrounding areas
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	UAT	0	0	0	0	0	0	0	ND
CDD	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	6	3	3	6	3	3	3	Cold temperatures could lead to increased use of deicing fluids that may spread to surrounding areas
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND
Coldest Day	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	6	3	3	6	3	3	3	Cold temperatures could lead to increased use of deicing fluids that may spread to surrounding areas
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND
Cold Spell Duration	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	NE	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	6	3	3	6	3	3	3	
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND
HDD	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	9	3	3	9	3	3	3	
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND
Icing Days	Underground Storm Water Tank	3	1	1	3	2	1	1	Cold temperatures could lead to increased use of deicing fluids that may spread to surrounding areas
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	3	1	1	3	2	1	1	Cold temperatures could lead to increased use of deicing fluids that may spread to surrounding areas
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	3	1	1	3	2	1	1	Cold temperatures could lead to increased use of deicing fluids that may spread to surrounding areas
	Generator	3	1	1	3	2	1	1	Cold temperatures could lead to increased use of deicing fluids that may spread to surrounding areas

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	GCB	3	1	1	3	2	1	1	Cold temperatures could lead to increased use of deicing fluids that may spread to surrounding areas
Icing Days cont'd	Generator Step-up Transformer (GSU)	3	1	1	3	2	1	1	Cold temperatures could lead to increased use of deicing fluids that may spread to surrounding areas
	Switchyard Expansion	3	1	1	3	2	1	1	Cold temperatures could lead to increased use of deicing fluids that may spread to surrounding areas
	Oil-water Separator (OWS)	3	1	1	3	2	1	1	Cold temperatures could lead to increased use of deicing fluids that may spread to surrounding areas
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	3	1	1	3	2	1	1	Cold temperatures could lead to increased use of deicing fluids that may spread to surrounding areas
Extreme Precipitation (short duration, high intensity) (1-hr, 100-year return in mm/hr)	Underground Storm Water Tank	6	3	6	6	3	6	3	Precipitation events have the potential to overwhelm stormwater capacity and spread contaminants to surrounding areas
	Parking	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
Extreme Precipitation (short duration, high intensity) (1-hr, 100-year return in mm/hr)	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Generator	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	GCB	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Generator Step-up Transformer (GSU)	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Switchyard Expansion	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Oil-water Separator (OWS)	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Precipitation (short duration, high intensity) (15min, 100-year return in mm/hr)	Underground Storm Water Tank	6	3	6	6	3	6	3	Precipitation events have the potential to overwhelm stormwater capacity and spread contaminants to surrounding areas
	Parking	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Generator	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Precipitation (short duration, high intensity) (15min, 100-year return in mm/hr)	GCB	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Generator Step-up Transformer (GSU)	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Switchyard Expansion	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Oil-water Separator (OWS)	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	2	1	2	2	1	2	1	Precipitation events have the potential to spread contaminants to surrounding areas
Max 1-day Total Precipitation (mm/day)	Underground Storm Water Tank	6	3	3	6	3	3	3	Precipitation events have the potential to overwhelm stormwater capacity and spread contaminants to surrounding areas
	Parking	2	1	1	2	1	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	1	1	2	1	1	1	Precipitation events have the potential to spread contaminants to surrounding areas

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Max 1-day Total Precipitation (mm/day) cont'd	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	2	1	1	2	1	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	2	1	1	2	1	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Generator	2	1	1	2	1	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	GCB	2	1	1	2	1	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Generator Step-up Transformer (GSU)	2	1	1	2	1	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
Max 1-day Total Precipitation (mm/day)	Switchyard Expansion	2	1	1	2	1	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Oil-water Separator (OWS)	2	1	1	2	1	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	2	1	1	2	1	1	1	Precipitation events have the potential to spread contaminants to surrounding areas

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Winter Precipitation (snowfall records)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	4	2	1	4	2	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	4	2	1	4	2	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	4	2	1	4	2	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	4	2	1	4	2	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Generator	4	2	1	4	2	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	GCB	4	2	1	4	2	1	1	Precipitation events have the potential to spread contaminants to surrounding areas

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Generator Step-up Transformer (GSU)	4	2	1	4	2	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
Winter Precipitation (snowfall records)	Switchyard Expansion	4	2	1	4	2	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Oil-water Separator (OWS)	4	2	1	4	2	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	4	2	1	4	2	1	1	Precipitation events have the potential to spread contaminants to surrounding areas
High Wind (km/hr, 50-year return)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	2	2	2	2	2	2	1	High wind events could spread debris and impact the surrounding environment
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Environmental]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Exhaust Stack	0	0	0	0	0	0	0	ND
High Wind (km/hr, 50-year return) cont'd	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND
Notes: ND, not determined									

Table C-3: Climate Risk Profile – Regulatory

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Heat (Days with Tmax > 30°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Heat Waves (Times/ Yr)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	NE	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Humidex (Days with Humidex > 35°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Cold (Days with Tmin < -15°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
CDD	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	
	UAT	0	0	0	0	0	0	0	

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Coldest Day	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Cold Spell Duration	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	
	UAT	0	0	0	0	0	0	0	

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
HDD	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	
	UAT	0	0	0	0	0	0	0	

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Icing Days	Underground Storm Water Tank	0	0	0	0	0	0	0	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Precipitation (short duration, high intensity) (1-hr, 100-year return in mm/hr)	Underground Storm Water Tank	6	3	6	6	3	6	3	High Precipitation events could impact Underground Storm Water Tank Infrastructure which may require regulatory authorities to be notified
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Precipitation (short duration, high intensity) (15min, 100-year return in mm/hr)	Underground Storm Water Tank	6	3	6	6	3	6	3	High Precipitation events could impact Underground Storm Water Tank Infrastructure which may require regulatory authorities to be notified
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Max 1-day Total Precipitation (mm/day)	Underground Storm Water Tank	6	3	3	6	3	3	3	High Precipitation events could impact Underground Storm Water Tank Infrastructure which may require regulatory authorities to be notified
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Winter Precipitation (snowfall records)	Underground Storm Water Tank	0	0	0	0	0	0	0	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Regulatory]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
High Wind (km/hr, 50-year return)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	4	4	4	4	4	4	2	High wind events could impact Noise Wall Infrastructure which may require regulatory authorities to be notified
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND
Notes: ND, not determined									

Table C- 4: Climate Risk Profile - Financial

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Heat (Days with Tmax > 30°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	4	6	8	4	8	8	2	High temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	4	6	8	4	8	8	2	High temperatures can impact the efficiency of gas turbine plants (EPRI, 2023)
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	4	6	8	4	8	8	2	High temperatures can impact the efficiency of gas turbine plants (EPRI, 2023)
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	4	6	8	4	8	8	2	High temperatures can impact the efficiency of electrical components
	GCB	6	9	12	6	12	12	3	High temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	8	12	16	8	16	16	4	High temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Heat (Days with Tmax > 30°C)	UAT	8	12	16	8	16	16	4	Higher ambient temperatures can reduce the cooling efficiency and current carrying capacity of UATs, as well as increase the losses and aging of the transformer insulation
Heat Waves (Times/ Yr)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	4	6	2	6	8	2	High temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	2	4	6	2	6	8	2	High temperatures can impact the efficiency of gas turbine plants (EPRI, 2023)
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	2	4	6	2	6	8	2	High temperatures can impact the efficiency of gas turbine plants (EPRI, 2023)
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	2	4	6	2	6	8	2	High temperatures can impact the efficiency of electrical components
	GCB	3	6	9	3	9	12	3	High temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	4	8	12	4	12	16	4	High temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Heat Waves (Times/ Yr)	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	
	UAT	4	8	12	4	12	16	4	Higher ambient temperatures can reduce the cooling efficiency and current carrying capacity of UATs, as well as increase the losses and aging of the transformer insulation
Humidex (Days with Humidex > 35°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	4	6	8	4	8	8	2	High temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	4	6	8	4	8	8	2	High temperatures can impact the efficiency of gas turbine plants (EPRI, 2023)
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	4	6	8	4	12	12	3	High temperatures can impact the efficiency of gas turbine plants (EPRI, 2023)
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	4	6	8	4	8	8	2	High temperatures can impact the efficiency of electrical components
	GCB	6	9	12	6	12	12	3	High temperatures can impact the efficiency of electrical components

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Humidex (Days with Humidex > 35°C)	Generator Step-up Transformer (GSU)	8	12	16	8	16	16	4	High temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	8	12	16	8	16	16	4	Higher ambient temperatures can reduce the cooling efficiency and current carrying capacity of UATs, as well as increase the losses and aging of the transformer insulation
Extreme Cold (Days with Tmin < -15°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	4	2	2	4	2	2	2	Low temperatures can increase the potential of power loss due to freezing (EPRI, 2023)
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	4	2	2	4	2	2	2	Low temperatures can increase the potential of power loss due to freezing (EPRI, 2023)
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Cold (Days with Tmin < -15°C)	Generator	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
	GCB	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	
	UAT	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
CDD	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	4	2	2	4	2	2	2	High temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	4	2	2	4	2	2	2	High temperatures can impact the efficiency of gas turbine plants (EPRI, 2023)
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	4	2	2	4	2	2	2	High temperatures can impact the efficiency of gas turbine plants (EPRI, 2023)
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
CDD	Generator	4	2	2	4	2	2	2	High temperatures can impact the efficiency of electrical components
	GCB	4	2	2	4	2	2	2	ND
	Generator Step-up Transformer (GSU)	4	2	2	4	2	2	2	High temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	
	UAT	4	2	2	4	2	2	2	Higher ambient temperatures can reduce the cooling efficiency and current carrying capacity of UATs, as well as increase the losses and aging of the transformer insulation
Coldest Day	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	4	2	2	4	2	2	2	Low temperatures can increase the potential of power loss due to freezing (EPRI, 2023)
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	4	2	2	4	2	2	2	Low temperatures can increase the potential of power loss due to freezing (EPRI, 2023)

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Coldest Day	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
	GCB	4	2	2	4	2	2	2	ND
	Generator Step-up Transformer (GSU)	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
Cold Spell Duration	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	4	2	2	4	2	2	2	Low temperatures can increase the potential of power loss due to freezing (EPRI, 2023)
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	4	2	2	4	2	2	2	Low temperatures can increase the potential of power loss due to freezing (EPRI, 2023)
	Exhaust Stack	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Cold Spell Duration	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
	GCB	4	2	2	4	2	2	2	ND
	Generator Step-up Transformer (GSU)	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
HDD	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	6	2	2	6	2	2	2	Low temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	6	2	2	6	2	2	2	Low temperatures can impact the efficiency of gas turbine plants (EPRI, 2023)
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	6	2	2	6	2	2	2	Low temperatures can impact the efficiency of gas turbine plants (EPRI, 2023)
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
HDD	Generator	6	2	2	6	2	2	2	Low temperatures can impact the efficiency of electrical components
	GCB	6	2	2	6	2	2	2	ND
	Generator Step-up Transformer (GSU)	6	2	2	6	2	2	2	Low temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	6	2	2	6	2	2	2	Low temperatures can impact the efficiency of electrical components
Icing Days	Underground Storm Water Tank	0			0	0	0	0	ND
	Parking	0			0	0	0	0	ND
	Noise Wall	0			0	0	0	0	ND
	Storage Structure (Turbine Storage)	0			0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	6			2	2	6	4	2	2	Low temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	6			2	2	6	4	2	2	Low temperatures can increase the potential of power loss due to freezing (EPRI, 2023)
	Inlet Air Filter	0			0	0	0	0	0	NE	ND
	Gas Turbine	6			2	2	6	4	2	2	Low temperatures can increase the potential of power loss due to freezing (EPRI, 2023)
	Exhaust Stack	0			0	0	0	0	0	0	ND
	Fin Fan Cooler	0			0	0	0	0	0	0	ND
	Generator	6			2	2	6	4	2	2	Low temperatures can impact the efficiency of electrical components
	GCB	6			2	2	6	4	2	2	Low temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	6			2	2	6	4	2	2	Low temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0			0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0			0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)						Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate				2050	2080		
Icing Days	Isophase Bus Duct			0	0	0	0	0	0	0	ND	
	UAT			6	2	2	6	4	2	2	Low temperatures can impact the efficiency of electrical components	
Extreme Precipitation (short duration, high intensity) (1-hr, 100-year return in mm/hr)	Underground Storm Water Tank			4	2	4	4	2	4	2	High precipitation events could overload the capacity of stormwater tanks may lead to increased maintenance costs	
	Parking			0	0	0	0	0	0	0	ND	
	Noise Wall			0	0	0	0	0	0	0	ND	
	Storage Structure (Turbine Storage)			0	0	0	0	0	0	0	ND	
	Packaged Electronic and Electrical Control Compartment (PEECC)			0	0	0	0	0	0	0	ND	
	Gas Compressor Enclosure and Cooler			0	0	0	0	0	0	0	ND	
	Inlet Air Filter			0	0	0	0	0	0	NE	ND	
	Gas Turbine			0	0	0	0	0	0	0	ND	
	Exhaust Stack			0	0	0	0	0	0	0	ND	
	Fin Fan Cooler			0	0	0	0	0	0	0	ND	
	Generator			4	2	4	4	2	4	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life	
	GCB			4	2	4	4	2	4	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life	
	Generator Step-up Transformer (GSU)			4	2	4	4	2	4	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life	
	Switchyard Expansion			0	0	0	0	0	0	0	ND	
	Oil-water Separator (OWS)			0	0	0	0	0	0	0	ND	

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)				Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate		2050	2080		
Extreme Precipitation (short duration, high intensity) (1-hr, 100-year return in mm/hr)	Isophase Bus Duct			0	0	0	0	0	0	ND
	UAT			4	2	4	4	2	4	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the UATs and their associated components, leading to power outages, increased maintenance costs, and reduced service life
Extreme Precipitation (short duration, high intensity) (15min, 100-year return in mm/hr)	Underground Storm Water Tank			4	2	4	4	2	4	2	High precipitation events could overload the capacity of stormwater tanks may lead to increased maintenance costs
	Parking			0	0	0	0	0	0	0	ND
	Noise Wall			0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)			0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)			0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler			0	0	0	0	0	0	0	ND
	Inlet Air Filter			0	0	0	0	0	0	NE	ND
	Gas Turbine			0	0	0	0	0	0	0	ND
	Exhaust Stack			0	0	0	0	0	0	0	ND
	Fin Fan Cooler			0	0	0	0	0	0	0	ND
	Generator			4	2	4	4	2	4	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life
	GCB			4	2	4	4	2	4	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life
	Generator Step-up Transformer (GSU)			4	2	4	4	2	4	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)				Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate		2050	2080		
Extreme Precipitation (short duration, high intensity) (15min, 100-year return in mm/hr)	Switchyard Expansion	0			0	0	0	0	ND	
	Oil-water Separator (OWS)	0			0	0	0	0	ND	
	Isophase Bus Duct	0			0	0	0	0		
	UAT	4			2	4	4	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the UATs and their associated components, leading to power outages, increased maintenance costs, and reduced service life	
Max 1-day Total Precipitation (mm/day)	Underground Storm Water Tank	4			2	2	4	2	High precipitation events could overload the capacity of stormwater tanks may lead to increased maintenance costs	
	Parking	0			0	0	0	0	ND	
	Noise Wall	0			0	0	0	0	ND	
	Storage Structure (Turbine Storage)	0			0	0	0	0	ND	
	Packaged Electronic and Electrical Control Compartment (PEECC)	0			0	0	0	0	ND	
	Gas Compressor Enclosure and Cooler	0			0	0	0	0	ND	
	Inlet Air Filter	0			0	0	0	NE	ND	
	Gas Turbine	0			0	0	0	0	ND	
	Exhaust Stack	0			0	0	0	0	ND	
	Fin Fan Cooler	0			0	0	0	0	ND	
	Generator	4			2	2	2	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life	
	GCB	4			2	2	2	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life	
	Generator Step-up Transformer (GSU)	4			2	2	2	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life	

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)				Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate		2050	2080		
Max 1-day Total Precipitation (mm/day)	Switchyard Expansion	0			0	0	0	0	0	0	ND	
	Oil-water Separator (OWS)	0			0	0	0	0	0	0	ND	
	Isophase Bus Duct	0			0	0	0	0	0	0	ND	
	UAT	4			2	2	4	2	2	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the UATs and their associated components, leading to power outages, increased maintenance costs, and reduced service life	
Winter Precipitation (snowfall records)	Underground Storm Water Tank	0			0	0	0	0	0	0	ND	
	Parking	0			0	0	0	0	0	0	ND	
	Noise Wall	4			2	1	4	2	1	1	Winter Precipitation events may increase deicing maintenance on noise wall infrastructure	
	Storage Structure (Turbine Storage)	4			2	1	4	2	1	1	Winter Precipitation events may increase deicing maintenance on turbine storage infrastructure	
	Packaged Electronic and Electrical Control Compartment (PEECC)	0			0	0	0	0	0	0	ND	
	Gas Compressor Enclosure and Cooler	0			0	0	0	0	0	0	ND	
	Inlet Air Filter	0			0	0	0	0	0	NE	ND	
	Gas Turbine	0			0	0	0	0	0	0	ND	
	Exhaust Stack	0			0	0	0	0	0	0	ND	
	Fin Fan Cooler	0			0	0	0	0	0	0	ND	
	Generator	8			4	2	8	4	2	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life	

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)						Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate				2050	2080		
Max 1-day Total Precipitation (mm/day)	GCB			8	4	2	8	4	2	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life	
	Generator Step-up Transformer (GSU)			8	4	2	8	4	2	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life	
	Switchyard Expansion			0	0	0	0	0	0	0	ND	
	Oil-water Separator (OWS)			0	0	0	0	0	0	0	ND	
	Isophase Bus Duct			0	0	0	0	0	0	0	ND	
	UAT			8	4	2	8	4	2	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the electrical components, leading to power outages, increased maintenance costs, and reduced service life	
High Wind (km/hr, 50-year return)	Underground Storm Water Tank			0	0	0	0	0	0	NE	ND	
	Parking			4	4	4	4	4	4	2	ND	
	Noise Wall			4	4	4	4	4	4	2	ND	
	Storage Structure (Turbine Storage)			4	4	4	4	4	4	2	ND	
	Packaged Electronic and Electrical Control Compartment (PEECC)			4	4	4	4	4	4	2	ND	
	Gas Compressor Enclosure and Cooler			4	4	4	4	4	4	2	ND	
	Inlet Air Filter			0	0	0	0	0	0	NE	ND	
	Gas Turbine			4	4	4	4	4	4	2	ND	
	Exhaust Stack			4	4	4	4	4	4	2	ND	
	Fin Fan Cooler			4	4	4	4	4	4	2	ND	
	Generator			4	4	4	4	4	4	2	ND	
	GCB			4	4	4	4	4	4	2	ND	

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Financial]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
High Wind (km/hr, 50-year return)	Generator Step-up Transformer (GSU)	4	4	4	4	4	2	ND	
	Switchyard Expansion	4	4	4	4	4	2	ND	
	Oil-water Separator (OWS)	4	4	4	4	4	2	ND	
	Isophase Bus Duct	4	4	4	4	4	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the ISBs and their associated components, leading to power outages, increased maintenance costs, and reduced service life	
	UAT	4	4	4	4	4	2	Extreme weather events such as floods, storms, lightning, and wildfires can damage the UATs and their associated components, leading to power outages, increased maintenance costs, and reduced service life	
Notes: ND, not determined									

Table C-5: Climate Risk Profile - Production

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Heat (Days with Tmax > 30°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	3	4	2	4	4	1	High temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	2	3	4	2	4	4	1	High temperatures can impact the efficiency of gas turbine plants (EPRI, 2023)
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	2	3	4	2	4	4	1	When temperatures are abnormally high, power production can be limited, and the efficiency of gas turbine plants reduced (EPRI,2023)
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	2	3	4	2	4	4	1	High temperatures can impact the efficiency of electrical components
	GCB	2	3	4	2	4	4	1	High temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	4	6	8	4	8	8	2	High temperatures can impact the efficiency of electrical components

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Heat (Days with Tmax > 30°C)	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	4	6	8	4	8	8	2	Higher ambient temperatures can reduce the cooling efficiency and current carrying capacity of UATs, as well as increase the losses and aging of the transformer insulation. Some of the climate risks and hazards that can affect UATs include moisture, acid, overheating, and oxidation. These factors can cause the paper insulation in the transformer to deteriorate, which can weaken the transformer's ability to perform
Heat Waves (Times/ Yr)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	1	2	3	1	3	4	1	High temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	1	2	3	1	3	4	1	When temperatures are abnormally high, power production can be limited, and the efficiency of gas turbine plants reduced (EPRI,2023)

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
Heat Waves (Times/ Yr)	Gas Turbine	1	2	3	1	3	4	1	When temperatures are abnormally high, power production can be limited, and the efficiency of gas turbine plants reduced (EPRI,2023)
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	1	2	3	1	3	4	1	High temperatures can impact the efficiency of electrical components
	GCB	1	2	3	1	3	4	1	High temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	2	4	6	2	6	8	2	High temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	2	4	6	2	6	8	2	Higher ambient temperatures can reduce the cooling efficiency and current carrying capacity of UATs, as well as increase the losses and aging of the transformer insulation. Some of the climate risks and hazards that can affect UATs include moisture, acid, overheating, and oxidation. These factors can cause the paper insulation in the transformer to deteriorate, which can weaken the transformer's ability to perform

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Humidex (Days with Humidex > 35°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	3	4	2	4	4	1	High temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	2	3	4	2	4	4	1	When temperatures are abnormally high, power production can be limited, and the efficiency of gas turbine plants reduced (EPRI,2023)
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	2	3	4	2	4	4	1	When temperatures are abnormally high, power production can be limited, and the efficiency of gas turbine plants reduced (EPRI,2023)

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Humidex (Days with Humidex > 35°C)	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	2	3	4	2	4	4	1	High temperatures can impact the efficiency of electrical components
	GCB	2	3	4	2	4	4	1	High temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	4	6	8	4	8	8	2	High temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	4	6	8	4	8	8	2	Higher ambient temperatures can reduce the cooling efficiency and current carrying capacity of UATs, as well as increase the losses and aging of the transformer insulation. Some of the climate risks and hazards that can affect UATs include moisture, acid, overheating, and oxidation. These factors can cause the paper insulation in the transformer to deteriorate, which can weaken the transformer's ability to perform

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Cold (Days with Tmin < -15°C)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	2	1	1	2	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023) Additional concerns include gas availability due to high domestic demand and/or poor cold weather performance of pipeline compressors.
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	2	1	1	2	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023) Additional concerns include gas availability due to high domestic demand and/or poor cold weather performance of pipeline compressors.
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Cold (Days with Tmin < -15°C)	GCB	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND
CDD	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	2	1	1	2	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023) Additional concerns include gas availability due to high domestic demand and/or poor cold weather performance of pipeline compressors.

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
CDD	Gas Turbine	2	1	1	2	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023) Additional concerns include gas availability due to high domestic demand and/or poor cold weather performance of pipeline compressors.
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components
	GCB	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	4	2	2	4	2	2	2	Low temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	4	2	2	4	2	2	2	Higher ambient temperatures can reduce the cooling efficiency and current carrying capacity of UATs, as well as increase the losses and aging of the transformer insulation. Some of the climate risks and hazards that can affect UATs include moisture, acid, overheating, and oxidation. These factors can cause the paper insulation in the transformer

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
									to deteriorate, which can weaken the transformer's ability to perform
Coldest Day	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	2	1	1	2	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023) Additional concerns include gas availability due to high domestic demand and/or poor cold weather performance of pipeline compressors.
	Inlet Air Filter	0	0	0	0	0	0	NE	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Coldest Day	Gas Turbine	2	1	1	2	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023) Additional concerns include gas availability due to high domestic demand and/or poor cold weather performance of pipeline compressors.
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components
	GCB	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	2	1	1	2	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023)

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Cold Spell Duration	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components
Coldest Day Cold Spell Duration	Gas Compressor Enclosure and Cooler	2	1	1	2	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023) Additional concerns include gas availability due to high domestic demand and/or poor cold weather performance of pipeline compressors.
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	2	1	1	2	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023) Additional concerns include gas availability due to high domestic demand and/or poor cold weather performance of pipeline compressors.
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Coldest Day Cold Spell Duration	GCB	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	2	1	1	2	1	1	1	Low temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	2	1	1	2	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023)
HDD	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	3	1	1	3	1	1	1	Low temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	3	1	1	3	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023) Additional concerns include gas availability due to high domestic demand and/or poor

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
									cold weather performance of pipeline compressors.
HDD	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	3	1	1	3	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023) Additional concerns include gas availability due to high domestic demand and/or poor cold weather performance of pipeline compressors.
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	3	1	1	3	1	1	1	Low temperatures can impact the efficiency of electrical components
	GCB	3	1	1	3	1	1	1	Low temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	3	1	1	3	1	1	1	Low temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	3	1	1	3	1	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023)

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Icing Days	Underground Storm Water Tank	0	0	0	0	0	0	0	ND
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	3	1	1	3	2	1	1	Low temperatures can impact the efficiency of electrical components
	Gas Compressor Enclosure and Cooler	3	1	1	3	2	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023) Additional concerns include gas availability due to high domestic demand and/or poor cold weather performance of pipeline compressors.
	Inlet Air Filter	0	0	0	0	0	0	0	ND
	Gas Turbine	3	1	1	3	2	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023) Additional concerns include gas availability due to high domestic demand and/or poor cold weather performance of pipeline compressors.
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	3	1	1	3	2	1	1	Low temperatures can impact the efficiency of electrical components

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Icing Days	GCB	3	1	1	3	2	1	1	Low temperatures can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	3	1	1	3	2	1	1	Low temperatures can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	3	1	1	3	2	1	1	When temperatures are abnormally low, concerns about loss of power production due to freezing are significant (EPRI, 2023)
Extreme Precipitation (short duration, high intensity) (1-hr, 100-year return in mm/hr)	Underground Storm Water Tank	6	3	6	6	3	6	3	Due to high precipitation events, site drainage and stormwater management can be overwhelmed leading to localized flooding, potentially blocking access to critical equipment. (EPRI, 2023)
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Precipitation (short duration, high intensity) (1-hr, 100-year return in mm/hr)	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	2	1	2	2	1	2	1	High precipitation events can impact the efficiency of electrical components
	Generator Step-up Transformer (GSU)	2	1	2	2	1	2	1	High precipitation events can impact the efficiency of electrical components
	Switchyard Expansion	0	0	0	0	0	0	0	High precipitation events can impact the efficiency of electrical components
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	2	1	2	2	1	2	1	Extreme weather events such as floods, storms, lightning, and wildfires can damage the UATs and their associated components, leading to power outages, increased maintenance costs, and reduced service life. Some of the climate risks and hazards that can affect UATs include moisture, acid, overheating, and oxidation. These factors can cause the paper insulation in the transformer to deteriorate, which can weaken the transformer’s ability to perform.

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Precipitation (short duration, high intensity) (15min, 100-year return in mm/hr)	Underground Storm Water Tank	6	3	6	6	3	6	3	Due to high precipitation events, site drainage and stormwater management can be overwhelmed leading to localized flooding, potentially blocking access to critical equipment. (EPRI, 2023)
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Extreme Precipitation (short duration, high intensity) (15min, 100-year return in mm/hr)	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	2	1	2	2	1	2	1	Due to high precipitation events, site drainage and stormwater management can be overwhelmed leading to localized flooding, potentially blocking access to critical equipment. (EPRI, 2023)
	Generator Step-up Transformer (GSU)	2	1	2	2	1	2	1	Due to high precipitation events, site drainage and stormwater management can be overwhelmed leading to localized flooding, potentially blocking access to critical equipment. (EPRI, 2023)
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	
	UAT	2	1	2	2	1	2	1	Extreme weather events such as floods, storms, lightning, and wildfires can damage the UATs and their associated components, leading to power outages, increased maintenance costs, and reduced service life. Some of the climate risks and hazards that can affect UATs include moisture, acid, overheating, and oxidation. These factors can cause the paper insulation in the transformer

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
									to deteriorate, which can weaken the transformer's ability to perform.
Max 1-day Total Precipitation (mm/day)	Underground Storm Water Tank	6	3	3	6	3	3	3	Due to high precipitation events, site drainage and stormwater management can be overwhelmed leading to localized flooding, potentially blocking access to critical equipment. (EPRI, 2023)
	Parking	0	0	0	0	0	0	0	ND
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	2	1	1	2	1	1	1	Due to high precipitation events, site drainage and stormwater management can be overwhelmed leading to localized flooding, potentially blocking access to critical equipment. (EPRI, 2023)

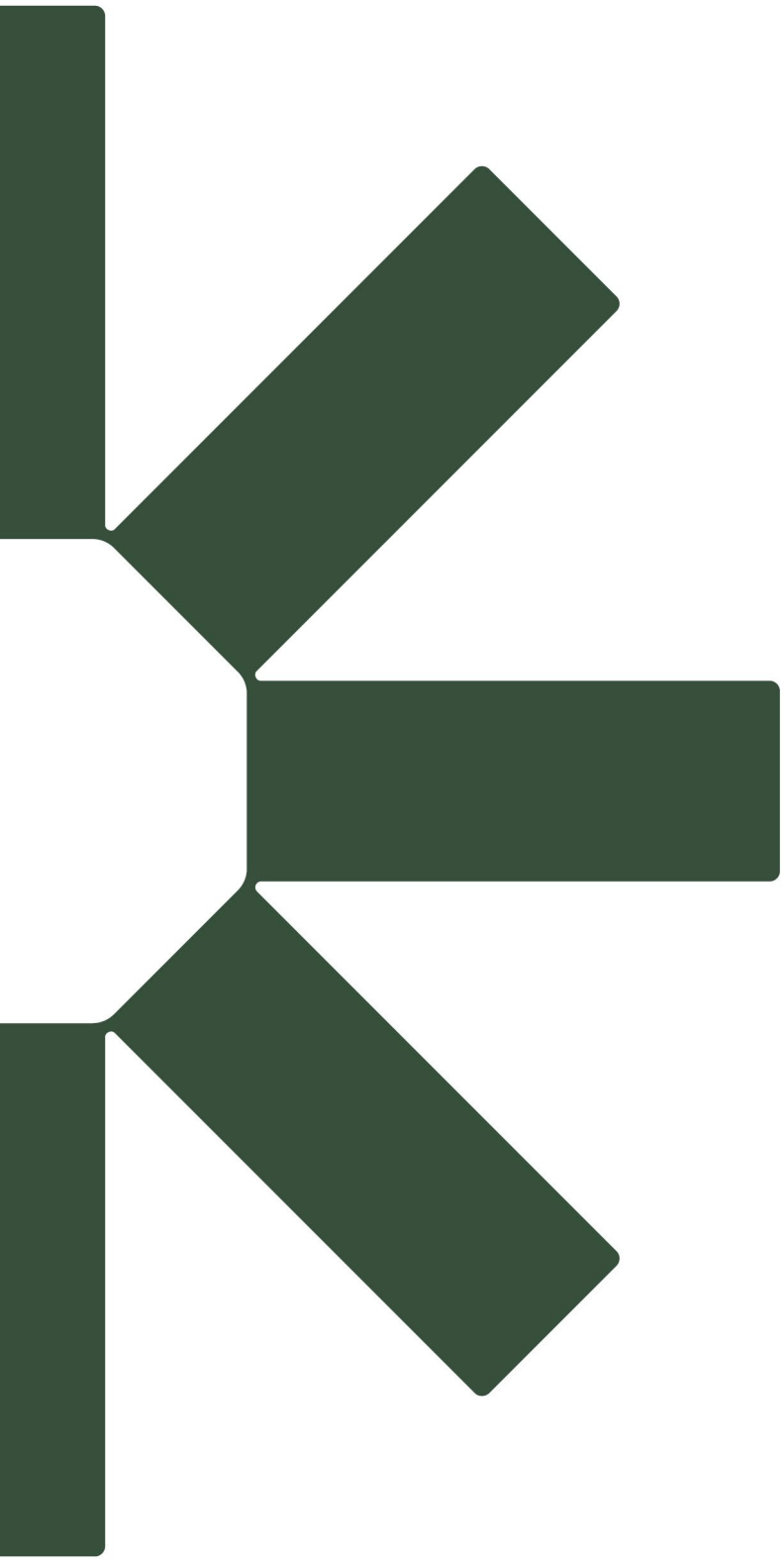
Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
	Generator Step-up Transformer (GSU)	2	1	1	2	1	1	1	Due to high precipitation events, site drainage and stormwater management can be overwhelmed leading to localized flooding, potentially blocking access to critical equipment. (EPRI, 2023)
Max 1-day Total Precipitation (mm/day)	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	2	1	1	2	1	1	1	Extreme weather events such as floods, storms, lightning, and wildfires can damage the UATs and their associated components, leading to power outages, increased maintenance costs, and reduced service life. Some of the climate risks and hazards that can affect UATs include moisture, acid, overheating, and oxidation. These factors can cause the paper insulation in the transformer to deteriorate, which can weaken the transformer's ability to perform.

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Winter Precipitation (snowfall records)	Underground Storm Water Tank	4	2	1	4	2	1	1	Due to high precipitation events, site drainage and stormwater management can be overwhelmed leading to localized flooding, potentially blocking access to critical equipment. (EPRI, 2023)
	Parking	4	2	1	4	2	1	1	Due to high precipitation events, site drainage and stormwater management can be overwhelmed leading to localized flooding, potentially blocking access to critical equipment. (EPRI, 2023)
	Noise Wall	0	0	0	0	0	0	0	ND
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	ND
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND
	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	4	2	1	4	2	1	1	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
Winter Precipitation (snowfall records)	Generator Step-up Transformer (GSU)	4	2	1	4	2	1	1	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	4	2	1	4	2	1	1	Extreme weather events such as floods, storms, lightning, and wildfires can damage the UATs and their associated components, leading to power outages, increased maintenance costs, and reduced service life. Some of the climate risks and hazards that can affect UATs include moisture, acid, overheating, and oxidation. These factors can cause the paper insulation in the transformer to deteriorate, which can weaken the transformer's ability to perform.

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
High Wind (km/hr, 50-year return)	Underground Storm Water Tank	0	0	0	0	0	0	NE	ND
	Parking	0	0	0	0	0	0	0	High Wind events may impact parking infrastructure through direct impact or flying debris
	Noise Wall	0	0	0	0	0	0	0	High Wind events may impact noise wall infrastructure through direct impact or flying debris
	Storage Structure (Turbine Storage)	0	0	0	0	0	0	0	High Wind events may impact storage structure infrastructure through direct impact or flying debris
	Packaged Electronic and Electrical Control Compartment (PEECC)	0	0	0	0	0	0	0	ND
	Gas Compressor Enclosure and Cooler	0	0	0	0	0	0	0	ND
	Inlet Air Filter	0	0	0	0	0	0	NE	ND
	Gas Turbine	0	0	0	0	0	0	0	ND

Climate Hazards	Project Component Affected (People)	Risk Rating (SSP2-4.5)			Risk Rating (SSP5-8.5)			Project Component Performance Affected [Consequence Rating: Production]	Impacts and Consequences - People
		Current Climate	2050	2080	Current Climate	2050	2080		
High Wind (km/hr, 50-year return)	Exhaust Stack	0	0	0	0	0	0	0	ND
	Fin Fan Cooler	0	0	0	0	0	0	0	ND
	Generator	0	0	0	0	0	0	0	ND
	GCB	0	0	0	0	0	0	0	ND
	Generator Step-up Transformer (GSU)	0	0	0	0	0	0	0	ND
	Switchyard Expansion	0	0	0	0	0	0	0	ND
	Oil-water Separator (OWS)	0	0	0	0	0	0	0	ND
	Isophase Bus Duct	0	0	0	0	0	0	0	ND
	UAT	0	0	0	0	0	0	0	ND
Notes: ND, not determined									



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