**TERMS OF REFERENCE**

1. **GENERAL PROJECT STATEMENT**

Project Title: BC Wildfire risk prediction

**CLIENT ORGANIZATION**

Company Name: Smart Microgrid Applied Research Team

Address: 3700 Willingdon Ave, Burnaby, British Columbia, Canada V5G 3H2

Tel No.: 604-434-5734

**EXECUTIVE SPONSOR**

Executive Sponsor Name: Doctor Vidya Vankayala - Director, Smart Microgrid Applied Research Team (SMART)

Tel No.: 604-456-8074

Email: vidya\_vankayala@bcit.ca

**PROJECT TEAM**

Tolulope Adegboye 6043144642 [tadegboye@my.bcit.ca](mailto:tadegboye@my.bcit.ca)

Chi-Yu Lee (Alison) 7786804021 [clee724@my.bcit.ca](mailto:clee724@my.bcit.ca)

Dien Vo (Jay) - 236.998.9191 - [dvo14@my.bcit.ca](mailto:dvo14@my.bcit.ca)

1. **PROBLEM/OPPORTUNITY STATEMENT**

How can BCIT predict the potential of wildfires in BC based on several variables?

Having a preliminary model to predict wildfire risk that can be improved by other researchers can help mitigate it in the future. Authorities can potentially use these predictive models to readjust their spending to avoid property loss and damages from the fires.

1. **PROJECT GOAL STATEMENT**

The goal of this project is to develop a predictive model that estimates the wildfire risk and using historical data. By analyzing patterns in past wildfires, weather conditions, and other environmental factors, the model aims to identify areas at higher risk.

**PROJECT SCOPE**

* Source data
* ETL and visuals
* Provide the descriptive analysis of the data
* Observe relationship between area burned, temperature and property damage in dollars
* Create model to predict the probability of fires in BC
* Provide detail reports and give a (mid-point & final) presentation to BCIT SMART only

**OUT OF SCOPE**

* Gas emissions analysis
* BC towns data analysis
* Formatting the files for seamless technical integration into other systems
* Insurance premiums predictions

**PROJECT OBJECTIVES**

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| --- | --- | --- | --- | --- |
|  | **Description** | **Due Date** | **Deliverable** | **Success Measure** |
| 1 | Determine trends in the total areas burned and BC wildfire property damages since 1990. | 04/13/2025 | Presentation | The client understands the overview. |
| 2 | Determine what are key inputs to build the predicting model. | 04/13/25 | Presentation | The client understands why we put a certain variable in the model. |
| 3 | Complete the mid-point report to the client. | 04/13/25 | Report | The client understands where the team is and modify the report components if needed. |
| 4 | Predict the risk of fires for BC. | 05/27/25 | Presentation | The client understands how the model works, its evaluation and how accurate the model did. |
| 5 | Determine the impact of area burned, temperature with property damage. | 05/27/25 | Presentation | The client understands the impact of other inputs in the model. |
| 6 | Complete the final report | 05/27/25 | Report | The client fully understands the analysis report and how the team incorporates the feedback from the midpoint meeting. |
| 7 | Complete the presentation | 05/27/25 | Presentation | The client understands all the key insights from the report. |

**SUCCESS CRITERIA**

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| --- | --- |
| **Deliverable** | **Criteria in addition to measures above** |
| Data Files | All data files with modifications and commented Python and R code should be delivered to the client. |
| Data Model | Data is used to create a predictive model that can be used to make insights that can be expanded by professional insights. |
| Report | It should include some comprehensive descriptive analytical insights into the data and a thorough exploration of the predictive variables used to make the model. The model’s benefits and opportunities for further uses should be highlighted. |
| Presentation | It should be delivered in a comprehensible and succinct manner that highlights the key insights made through the model and the potential usefulness of it to the project sponsor. |

1. **MILESTONES**

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| --- | --- |
| **Description** | **Due Date** |
| First Meeting | 03/31/25 |
| Project Charter Sign Off | 04/02/25 |
| Detailed Project Plan | 04/08/25 |
| Mid-Point Review | 04/16/25 |
| Report Outline | 05/13/25 |
| Report Draft | 05/20/25 |
| Final Presentation | 05/27/25 |

1. **RESOURCE REQUIREMENTS**

People: 3 researchers for the duration of this project.

Equipment: No additional equipment is required unless the client specifies a particular paid software.

1. **CONSTRAINS, ASSUMPTIONS and RISKS**

**PROJECT CONSTRAINTS**

What are the limitations on the project, which impact the deliverables?

* Only have Power BI, SQL, Python, and R as the available software
* Data by provinces not cities

**PROJECT ASSUMPTIONS**

* It is assumed that past wildfire occurrences and related environmental conditions (e.g., temperature, humidity, wind, etc.) are indicative of future wildfire risks.
* The project assumes that the datasets used—such as weather data, land cover, and historical fire records—are correct and come from trusted sources like government agencies or scientific databases.

**PROJECT RISKS**

The accuracy of the predictive model depends heavily on the quality, completeness, and timeliness of historical data. If key data—such as weather records, fire reports, or vegetation information—is missing, inconsistent, or not updated regularly, it may lead to unreliable predictions and limit the model’s effectiveness. There are possibly some limitations when it comes to the data that can be delivered.

1. **APPROVALS**

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| --- | --- | --- |
| Executive Sponsor |  | Date: |
| Project Manager |  | Date: |
| Client |  | Date: |
| Client |  | Date: |