User Acceptance Testing (UAT) Template

Date	15 February 2026
Team ID	LTVIP2026TMIDS90527
Project Name	Weather-Based Prediction of Wind Turbine Energy Output: A Next-Generation Approach to Renewable Energy Management
Maximum Marks	

Project Overview

Project Name: Wind Turbine Energy Prediction
Project Description: A machine learning–based system that predicts wind turbine energy output using historical turbine data and live weather inputs. The project integrates a Random Forest regression model with a Flask web application and OpenWeather API for real-time predictions.
Project Version: v1.0
Testing Period: 01 Mar 2026 – 15 Mar 2026

Testing Scope

- **Features & Functionalities to be Tested:**
  - **Data preprocessing (handling missing values, renaming fields, cleaning inconsistencies).**
  - **Model training and prediction accuracy.**
  - **Weather API integration for live data.**
  - **Flask-based dashboard functionality.**
  - **Visualization outputs (scatter plots, line charts, correlation heatmaps).**
- **User Stories / Requirements to be Tested:**
  - **As a user, I can input theoretical power and wind speed to get predicted output.**
  - **As a user, I can select a city to view live weather data.**
  - **As a user, I can view prediction results on the dashboard.**
  - **As a project owner, I can generate reports and visualizations for evaluation.**

Testing Environment

- **URL/Location: Localhost (Flask server) – http://127.0.0.1:5000/**
- **Credentials (if required): Not applicable (open access during testing).**

Test Cases

Test Case ID	Test Scenario	Test Steps	Expected Result	Actual Result	Pass/ Fail
TC-001	Input Validation – Numeric Fields	Enter valid and invalid values for Theoretical Power and Wind Speed	Valid inputs accepted, invalid inputs rejected	–	–
TC-002	Weather API Connection	Select a city and fetch weather data	API responds with temperature, humidity, pressure, wind speed	–	–
TC-003	Prediction Output	Provide valid inputs and click “Predict”	Correct energy output generated by ML model	–	–
TC-004	Error Handling	Submit empty or invalid inputs	Application shows “Invalid Input” message	–	–
TC-005	Dashboard Navigation	Navigate between intro page and prediction page	Pages load correctly, forms and buttons functional	–	–

Bug Tracking

Bug ID	Bug Description	Steps to Reproduce	Severity	Status	Additional Feedback
BG-001	Weather API fails for invalid city	Enter a city not supported by OpenWeather API	Low	Open	Add error message for unsupported cities
BG-002	Prediction error on empty input	Submit form without entering values	Medium	In Progress	Improve input validation
BG-003	Dashboard refresh issue	Refresh prediction page after submitting inputs	Low	Closed	Fixed with session handling

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Sign-off

- **Tester Name: C veeresh kumar**
- **Date: 16 Mar 2026**
- **Signature: _____**

Notes

- **Ensure all test cases cover both positive and negative scenarios.**
- **Encourage testers to provide detailed feedback, including suggestions for improvement.**

- **Bug tracking must include severity, status, and reproduction steps.**
- **Obtain sign-off from both the project manager and product owner before deployment.**