**Model Development Phase Template**

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| Date | 20 July 2025 |
| Team ID | SWTID1750360304 |
| Project Title | Power consumption analysis for households |
| Maximum Marks | 6 Marks |

**Model Selection Report**

In the forthcoming Model Selection Report, various models will be outlined, detailing their descriptions, hyperparameters, and performance metrics, including Accuracy or F1 Score. This comprehensive report will provide insights into the chosen models and their effectiveness.

**Model Selection Report:**

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| **Model** | **Description** | **Hyperparameters** | **Performance Metric (e.g., Accuracy, F1 Score)** |
| **Logistic Regression** | A regularized logistic regression model for classifying household energy consumption patterns (e.g., normal vs. peak usage). Designed for interpretability and fast inference on large-scale time-series data. | {  'penalty': 'l2',  'C': 0.5, # Regularization strength  'solver': 'saga', # Handles large datasets  'max\_iter': 500, # Ensures convergence  'class\_weight': 'balanced' # Addresses class imbalance  } | * **Accuracy**: 86.2% * **F1-Score**: 0.84 (weighted) * **Precision/Recall**:   + Low Consumption: 0.85 / 0.83   + High Consumption: 0.87 / 0.89 |

