# Electric Vehicle Trends Classification

# Project Abstract

In this classification-based data analytics project, the overarching goal is to categorize Forward Sortation Areas (FSAs) in Ontario based on the predominant type of electric vehicle (EV) adoption—either Battery Electric Vehicles (BEVs) or Plug-in Hybrid Electric Vehicles (PHEVs). This project stems from the need to understand the distribution and patterns of EV adoption across different regions, providing insights into the preferences and choices of vehicle owners. The central problem addressed here is the classification of FSAs into categories corresponding to the primary type of EV present in each area.

The dataset utilized for this project comprises information on the total number of EVs, BEVs, and PHEVs in each FSA, with FSAs being defined by the first three characters of the postal code. The dataset also includes the TotalEV metric, indicating the combined number of BEVs and PHEVs in a specific FSA. By leveraging this dataset, the aim is to build a classification model that accurately distinguishes between FSAs dominated by BEVs and those where PHEVs are more prevalent.

To achieve this, the project will employ various machine learning classification techniques such as logistic regression, k-nearest neighbor regression, decision tree classifier, random forest classifier, support vector machines (SVM), or neural networks. These algorithms will be trained on historical data, using features such as the total number of EVs, BEVs, and PHEVs in each FSA. The model's objective is to generalize from this training data to accurately classify new instances of FSAs into the appropriate category based on their EV composition. The implementation will involve data preprocessing, including handling missing values and potentially feature engineering to enhance the model's predictive accuracy.

The anticipated outcome of this project is a classification model that can effectively identify whether a given FSA in Ontario is more inclined towards BEVs or PHEVs. This information can provide valuable insights for stakeholders, policymakers, and businesses involved in the electric vehicle ecosystem, helping them tailor strategies and initiatives to specific regions based on their EV adoption profiles.

Dataset is from [Electric Vehicles in Ontario – By Forward Sortation Area](https://data.ontario.ca/dataset/electric-vehicles-in-ontario-by-forward-sortation-area)