The aim of this article is to make short term predictions of the electricity consumption in households employing various forecasting models. Specifically, the intention is to predict consumption for each hour over the next seven days. The forecast models can be divided into two groups: Base forecast models, which include naive, statistical and machine learning-based models, and Ensemble forecast models. In this study, we employ three ensemble methods to enhance prediction accuracy. The first method simply calculates the median of the predictions from the base models, minimizing the impact of outliers. The other two methods use the FFORMA methodology, which stands for Feature-based Forecast Model Averaging. FFORMA dynamically assigns weights to each forecast model based on their historical performance and predictive features. This method makes the forecasts more reliable and accurate by combining the best features of different models.

The dataset used is sourced from the {citar paper carlos}. Specifically, details the hourly electricity consumption in kilowatt-hours (kWh) recorded from 15964 anonymous households from early 2021 to 2022. These households (CUPS) are customer of the Basque electricity cooperative GoiEner. The original data has undergone cleaning and processing as described in \textbf{CITAR PAPER CARLOS}. In addition, metadata associated with these CUPS has also been used, which includes information such as the contracted tariff, contracted power, province of residence and the CNAE code (\textit{National Classification of Economic Activities}).

For the initial predictions, ten forecast models have been employed. We refer to them as base forecasts and they are a combination of naive (very simple methods that include the average or repetition of observations), statistical methods and machine learning models, as detailed in Table \ref{tab:baseForecast}. \textit{Mean}, \textit{LR} and the machine learning methods have been trained using the data from the last 21 days.

It is noteworthy that, although naive methods are typically considered to provide worse results and are often used merely to establish a baseline for error minimization, their performance in this case has been among the best\cite{CruzNaive}\cite{NaiveSimple}. This can be attributed to the observation that the energy consumption patterns of the CUPS do not vary significantly over short time periods, thus leading to more accurate predictions by these models than initially expected (see Results section).