

# Power Consumption Forecast : **A Sneak Peek**

Group 6 - Phase 4



## Who we are and the objectives we are addressing

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**1**

Household consumption patterns through the year

**2**

Evaluate relationship between power consumption and efficiency in households

**3**

Show the prediction of power consumption for the next four years

**4**

Policy and planning recommendations

## Definition of key terms

1

**Global active power** : Refers to the total active power consumed or generated across an entire electrical grid or power system.

2

**Global reactive power** : The amount of power that is lost before the power gets to the appliances

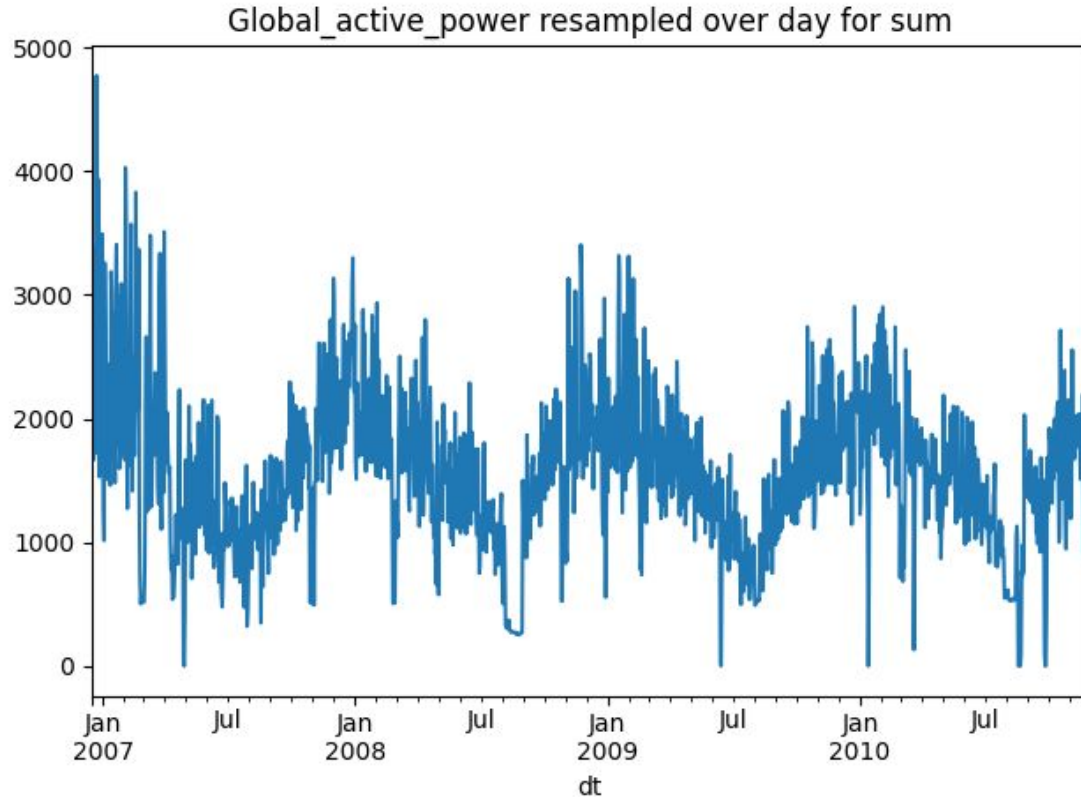
3

**Global intensity**: Represents a measure of the overall efficiency of the power system,

4

**Sub\_metering\_1, \_2 and \_3** : Represents the energy consumption, measured i of a specific sub-metered electrical load or appliance.

## Findings - Household consumption patterns (1 year)



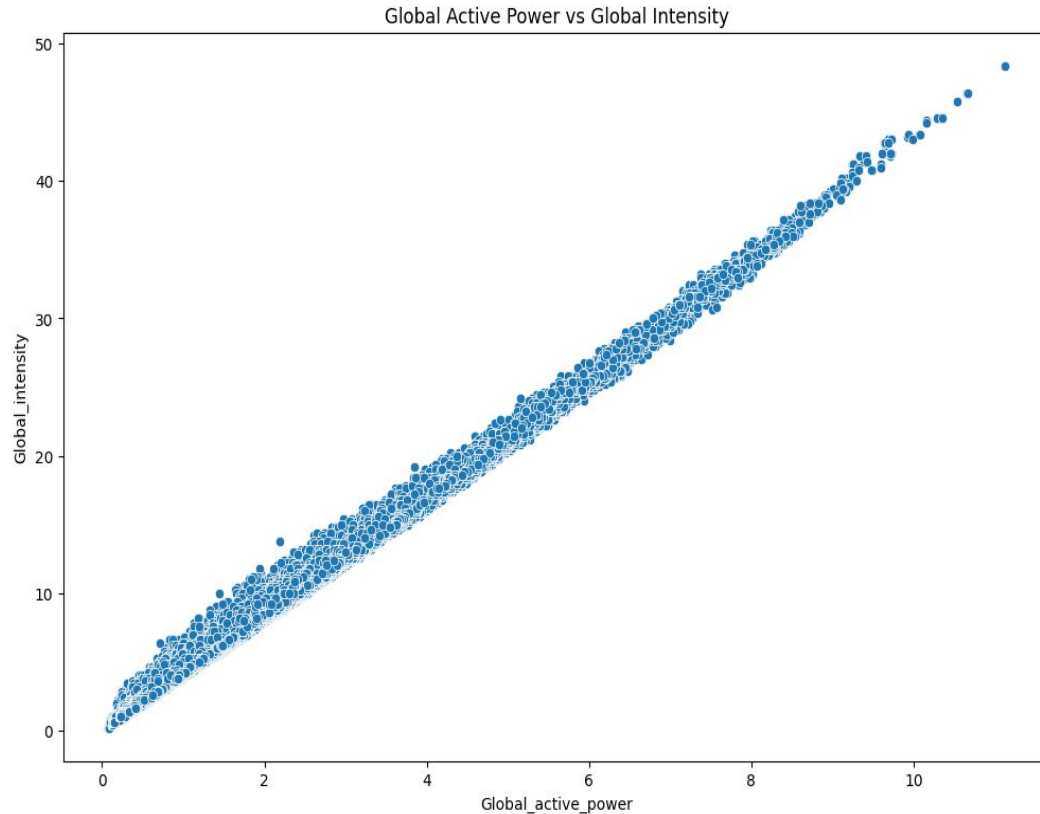
This is a representation of the power consumption over 4 years. From this we can deduce:

- January has the highest peak and it progressively drops over time.
- Its lowest mid year.

This means that in the area, there's:

- A seasonal variation(analyzed using timestamps in time series data) of power demand over the year.
- There is a midyear Lull in the power consumption could be because it is summer with low heating requirements.

# Findings - Relationship between power consumption and efficiency



What this graph shows the correlation between power consumption and its efficiency

We deduce that:

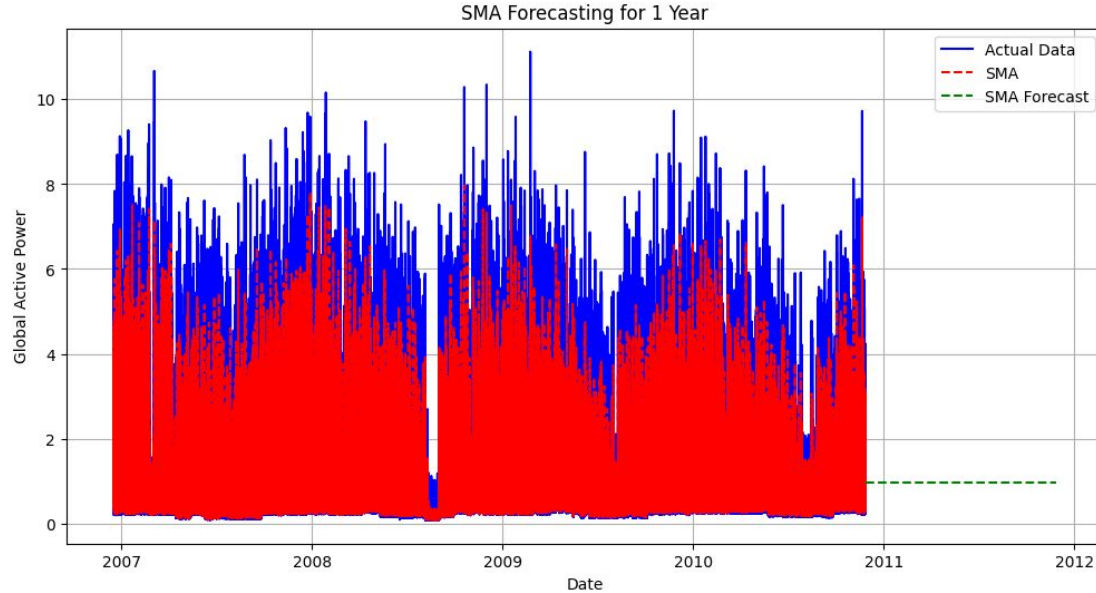
- The 2 are directly proportional hence the higher the consumption the higher the efficiency.

This leads to

- Increased energy costs
- Reduced incentives for conservation
- Increased potential for overconsumption

This is due to the notion that efficiency is achieved when more power is used.

## Findings - Prediction of power consumption



What this graph shows is that we are able to predict the power consumption accurately for the next 4 years .

With this information we are able to:

- Effectively plan and budget for energy
- Invest in Energy Efficiency and Renewable Energy
- Improve Resilience and Preparedness
- Allow for opportunities for Participation in Demand-Side Management

## Recommendations

To predict power consumption, we have a number of models that can be applied for this time series data. We evaluated 3 models namely;

1. Moving Average Model
2. Long Short-Term Memory
3. Seasonal Autoregressive Integrated Moving Average(SARIMA)

All the models did well when applied on actual data gave very good results. However, the best model turned out to be SARIMA since it had the least margin of error when comparing actual data and the predicted results.

# Thank You

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