Smart meter data analysis from London area

- Context
- Problem
- Analysis
- Conclusions

Did you know that the installation of smart meters is the best way to upgrade our energy supply by optimizing the power distribution, minimizing operating expenses as well as tackle climate change?

Project by: *Cristhian M. Ordoñez*

Smart meter data analysis from London area

- Context
- Problem
- Analysis
- Conclusions

2.3 GB Dataset

5.567 Houses in London

From: **Nov 2011**
to: **Feb 2014**

- This project is a data analysis from the London data store, that contains the energy consumption readings for a sample of 5,567 London **Households that took part in the UK Power Networks led Low Carbon London project**.
- After this initial study, **the British government decided to adopt smart meters** as part of their plan to update our ageing energy system.

Expected Benefits

Smart
Measurament

Eco-friendl..

Efficient
..

Integrated
..

Smart meter data analysis from London area

- Context
- Problem
- Analysis
- Conclusions

Energy Fee: Low
from 12:00 am to 08:00 am

~ 0.11 £ / kwh

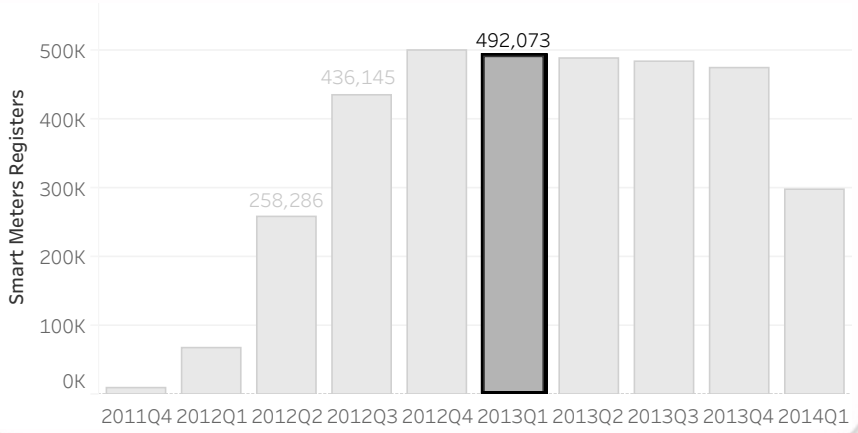
Energy Fee: Medium
from 08:00 am - 10:00 am
02:00 pm - 06:00 pm
10:00 pm - 12:00 am

~ 0.15 £ / kwh +27%

Energy Fee: High
from 10:00 am - 02:00 pm
06:00 pm - 10:00 pm

~ 0.24 £ / kwh +54%

About the Data:



Approach:

- Transforming, cleaning and modelling the dataset.
- Installation meters peak was reached by the year 2013.

Key research expectatives:

- Potential advantages for the users in reducing the value of their energy bill by reducing / optimizing their energy consumption.
- Technical and commercial advantages for energy distribution companies to deploy the implementation of Smart grids.

Smart meter data analysis from London area

- Context
- Problem
- Analysis
- Conclusions

Energy Fee: Low
from 12:00 am to 08:00 am

~ 0.11 £ / kwh

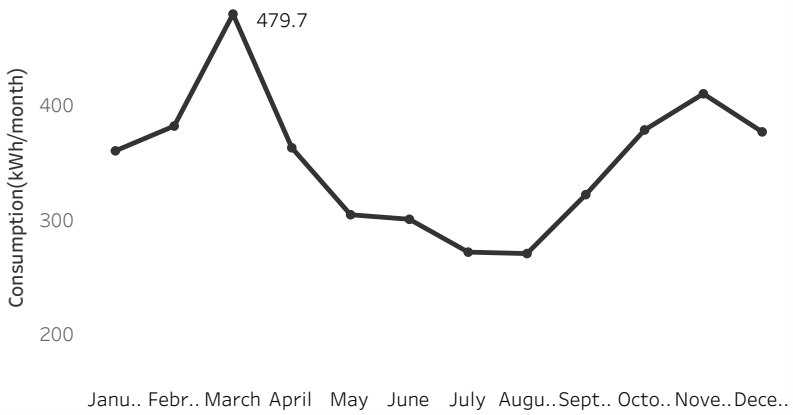
Energy Fee: Medium
from 08:00 am - 10:00 am
02:00 pm - 06:00 pm
10:00 pm - 12:00 am

~ 0.15 £ / kwh +27%

Energy Fee: High
from 10:00 am - 02:00 pm
06:00 pm - 10:00 pm

~ 0.24 £ / kwh +54%

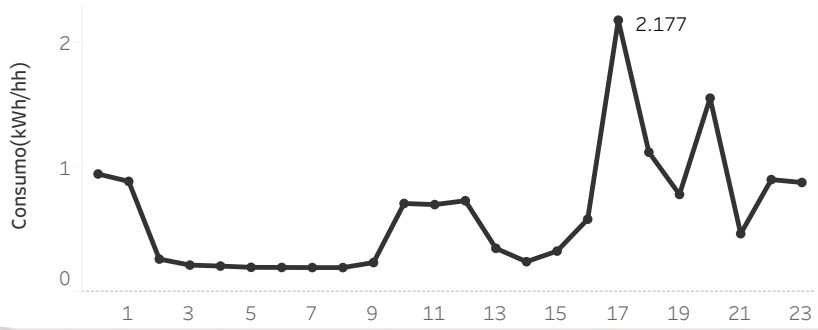
User's year consumption:



Highlights:

- Energy consumption peaks have a correlation with the highest coldest seasons in the UK.
- Total payments of the user were in between medium and high energy fees

User's daily consumption:



Highlights:

Estadísticas de Consumo	
Media	11.54
Desviación Estándar	4.57
Valor Mínimo	4.5
25%	8.96
50%	10.72
75%	12.91
Valor Máximo	39.28

- More than 90% of the user's day energy consumptions were after 4:00 pm.

Smart meter data analysis from London area

- Context
- Problem
- Analysis
- Conclusions

- In overall users paid for the energy bill throughout the year 840 £, however, **most of them are losing savings between 20% or 50% that can be reflected 7.560 £ *** that contrasts against the useful life of this metering device which can be cost around 30 £.

- With the massification of the installation of these smart meters, **the following advantages is enabled**:
  - **Improve safety and efficiency** of electricity transmission.
  - **Minimize operating** expenses that can be transferred to the final consumer.
  - **Reduces demand peaks** and restores interruptions much faster and more efficiently.
  - Optimizes energy distribution **reducing the possibility of having a total energy blackout** avoiding Trillions of economic losses.