

Possibilities of Submetering Analysis

Tuomo Kareoja

IOT Analytics

October 11, 2019

Agenda

Background

- What is Submetering

- What are the Possibilities of Submetering for IOT?

Analysis

- The Data

- Missing Data and Other Problems

- Basic Stats

Possible Applications

- Predictive Analytics

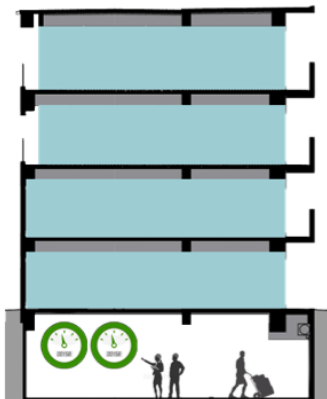
- Dashboards

Recommendations for Next Steps

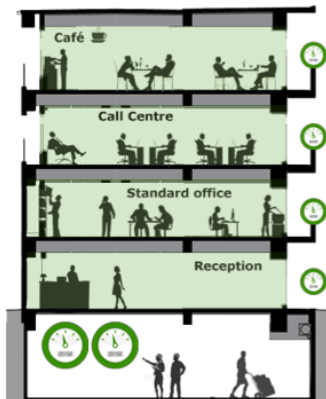


What is Submetering?

Building-level metering



Submetering by floor



What are the Possibilities of Submetering for IOT?

Connected Submeters give a real time reading of the energy use in different parts of buildings or even different device groups

This mean we can...

1. See what is actually spending that electricity
2. Pinpoint possible failure points fast and precisely
3. Gather time series data about the electricity use with a chosen granularity for further analysis

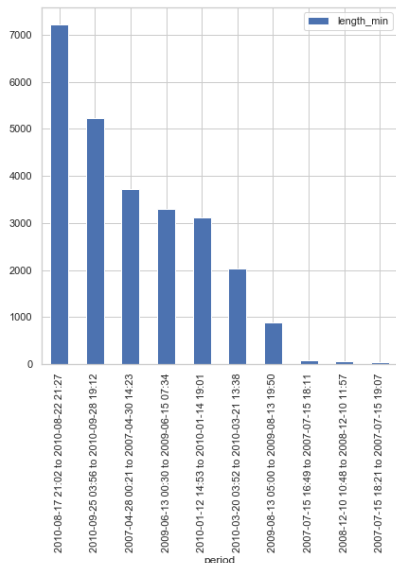
The Data

- ▶ Minute level readings from 3 submeters and overall energy usage between December 2006 and November 2010 in House in Sceaux
- ▶ The three submeters cover the kitchen, the laundry room and the combination of the water-heater and air-conditioning
- ▶ Electricity use not covered by submeters can be calculated by deducting the submeter readings from overall electricity use

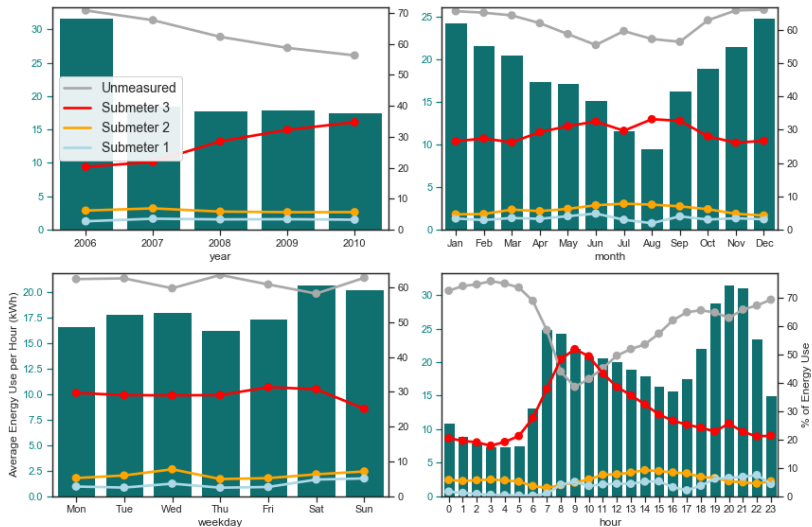


Missing Data and Other Problems

- ▶ Grouping of submeters is based on room and not function
 - ▶ Refrigerator is in the laundry room
 - ▶ Water heater and air-conditioner not separated
- ▶ 1.25 % of values missing. Sometimes in stretches over a day
 - ▶ Fixed with a predictive model
- ▶ Electricity use not covered by submeters makes up over half of the energy consumption



Basic Stats



Predictive Analytics

Problematic when taking too detailed view Work well on a larger scale

Customer facing application for monitoring electricity use can be combined with predictive analytics

Recommendations for Next Steps

Make sure that the submeter groupings are decided with the customer
Build customer facing dashboard with some predictive analytics
features

The End

Questions?