# Smart meter information analysis and actuators

## Smart solution 5
Smart lighting, lampposts and traffic posts as hubs for communication

Dashboard used for monitoring

## Measured impacts

**15%**
energy savings potential in Cologne

**5**
power substations monitored in Barcelona

**5**
minutes intervals when pulling data in Barcelona



## Barcelona and Cologne

### Technical partners

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## What is it?

Smart technologies, operating either through a centralized hub on a city-scale or individual use in the home, that enable data collection of different utilities usage to facilitate optimization in energy management and behavioral change.

## What did GrowSmarter do?

In Barcelona Endesa worked with Cellnex to implement a central data hub. Sensors were installed at five power substations. With the help of a camera, those sensors were used to visualize the real-time status of the installed sensors on an app. By collecting all data on a central platform, it becomes possible to have better maintenance and reduced intervention time in case of an emergency. In Barcelona this meant fewer management costs fewer black-outs and the potential to save expenses in the long run. The LoRa Communications protocol was also used and verified in Barcelona.

In Cologne, smart plugs were deployed as part of the SmartHome system (see factsheet 13) due to legal issues with deploying smart meters. A fully cloud-based data collection and analysis infrastructure has been implemented to provide insights about energy consumptions to tenants. A web-based energy insight dashboard was offered to tenants for visualizing and comparing their historic and real-time energy consumption. This means that tenants were able to identify high energy consumers and analyze their energy consumption in detail and reduce their overall energy consumptions and cost.

## Lessons learnt

It is important to understand that a large number of sensors were needed in Barcelona to create a larger communications network and to see the operation on a larger scale with more impact.  The costs associated with installing the sensors also decreases per sensor when installing a larger number of sensors.

In Cologne, it was clear that it is crucial to invest significantly and early in getting tenants to participate in the planned measures. On one hand this is because the topic of smart meters and smart plugs is very much driven by certificates, standards and privacy issues. On the other hand tenants in Cologne did not have a smart home solution yet and thus had reservations in adopting the measure. Thus, a solution was offered to users that already used Smart Home systems extensively and had experienced how they used the measure for optimizing their energy usage. While there is reason to be optimistic about the potential of this measure, further data needs to be collected to measure the impact.

## Upscaling & replication potential

The upscaling and replication potential for the SmartHome system has already been demonstrated by extending the measure to a Germany-wide testbed. As the dashboard is a cloud-based solution, it can easily be scaled up to virtually any size of users and energy metering devices and easily be replicated in different cities or residential areas. Any home in any city can benefit from this measure.

In Barcelona, the system is cloud-based so upscaling and replication only requires relevant data to upload. The technology has developed rapidly in later years and alongside fallings costs, this makes it ready for a large scale rollout.

Scale is an important factor, as is understanding the legal framework

SmartHome system in Cologne

## How did the measure work?

### Technical feasibility

Depends on legal situation in each country. Updating with real-time data adds a layer of complexity. The solution in Cologne  is highly feasible.

### Economic feasibility

Financially and economically feasible because it enables better decision-making. It can be an enabling measure and/ or open up new business models.

### Replication potential

This measure is replicable in any city, depending on the legal situation; distribution network is important. The fellow city of Cork is looking at replication.