# GUIDELINE: OPTIMIZING THE METER INSTALLATION PROCESS


## Abstract

This guideline was developed for project managers of DSOs or other metering operators (e.g. 3rd parties or suppliers) who have to design, develop and control the meter installation process that assures that consumers understand the changes that derive from this technology, and that it promotes their engagement with the smart meter. The meter installation process is both the setup of the infrastructure that allows the supplier to have a close relationship with customers and is an opportunity to create a positive first impression on the customers. EDP Distribuição, the Portuguese DSO, has experience with this process and used this for creating this guideline.


## What is it?

A carefully planned, step-by-step meter installation process can make all the difference between engaging consumers with your smart grid project or not. The change from a regular meter to a smart meter can be a change in the way consumers perceive their relationship with energy and with all the parties that intervene up the value chain (DSOs, ESCOs and retailers). Because of this new relationship, greater energy efficiencies, operation efficiencies, improvements of service quality and management of microproduction can be achieved.

The installation process ranges from: (i) the identification of the consumers that will be part of the project; (ii) meter installation technicians training; (iii) the information marketing campaign to generate awareness in the community; (iv) the equipment supply management; (v) the meter installation itself; (vi) a post-installation phase to assess that everything is working properly and ask for customers' feedback.

## When to use?

The installation of the smart meter can be seen as the backbone of a smart grid project and the enabler of a new relationship between the consumers and their energy suppliers and DSOs. That is why the installation usually happens at an early phase of the project. This usually takes place after the meter exchange is announced to the customer through one or more of the project's communication channels, in order to inform them about the objectives of the project and the need to change the old meter. In this phase, the customers are not used to the technology and might have many prejudices against it. A frustration of the customers in this early stage of the project, caused by misunderstanding or initial unanticipated problems, has to be avoided or it might jeopardize the success of the project.

## Large scale roll out (EDP Distribuição, PT)

EDP developed the installation process for the InovCity project, Portugal. More than 30,000 meters where installed in in Évora, Portugal, in different phases, which helped to develop and optimize the installation process. These phases were defined taking in account the availability of smart meters and available teams to install them.

The InovGrid project is expanding for seven cities, with 200.000 more Smart Meters and Smart Grid infrastructure. The full rollout date is yet to be determined by government officials. Meanwhile new technologies (PLC PRIME, RF Mesh), with different social and environmental characteristics (like customer's energy usage profile and regional quality of service) are being tested. Customers energy profile complies information on the type of meter that they have, the number of phases it has, the customers unique charge diagram; the customers contracted power, etc. The regions quality of service from a DSO is the quality of the network. It covers a range of issues such as how often customers have power cuts, how quickly electricity supplies are restored following such cuts and the quality of communication with customers and other parties. Together with different grid conditions, new smart grids applications and increasing business process integration. These different tests will provide relevant information that will robust the DSO solutions and expertise in the event of the roll out.

More information: http://www.inovgrid.pt/en

## What do you need to do?

A general approach would follow major tasks of the meter installation process:

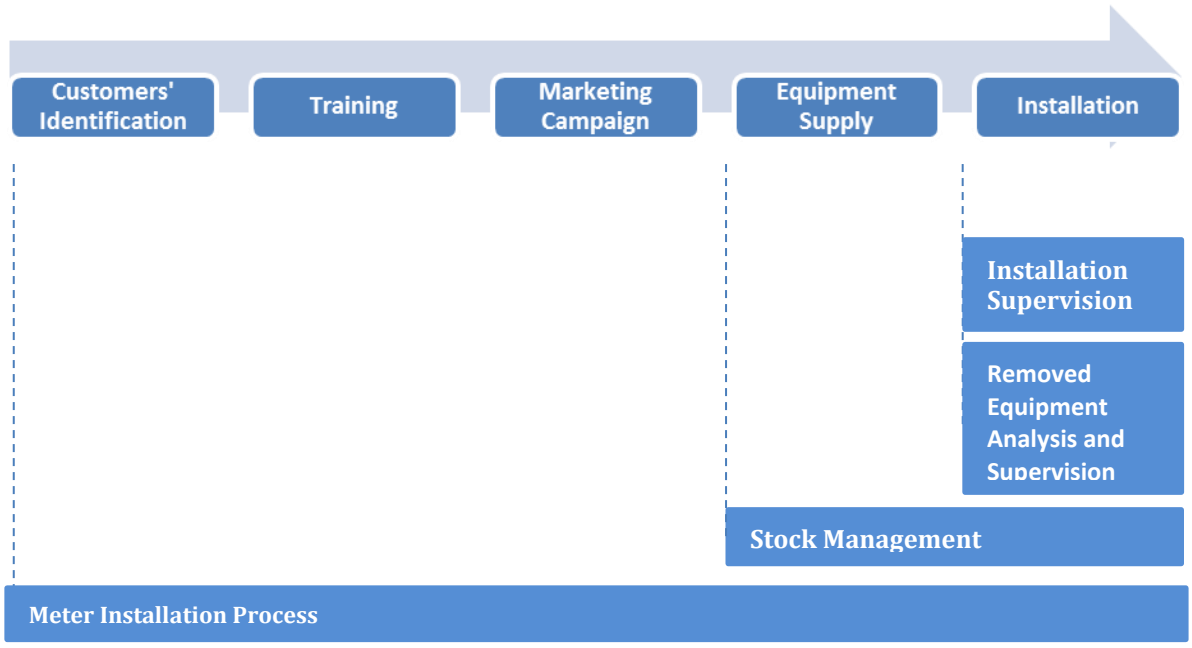


**Figure 1: A simplification of the meter installation process used by EDP in the InovCity project.**

The main tasks of this process are described below:

### 1. Identification of consumers

- Identification of the customer's power supply information (about network and secondary substations) and their technical specifications.
- Data analysis: technical and cost-benefit analysis (aggregation of customers by type of electrical installation; exclusion of customers that do not meet the criteria for participation; customer' aggregation by supplier and secondary substation);
- Approval of costumers selection and schedule of installation.

### 2. Training

- Provide information about the project to all installers, including the major differences of the installation processes in comparison to old meters;
- Provide different sets of training to all installers:
- Technical (meter and software utilization);
- Soft skills (end user's approach and project information) and
- Brand (DSO brand values and conduct code).

For more information on the training phase, please visit the tool Training installers.

### 3. Marketing campaign

- Stakeholders involvement: focus on local stakeholders, for example, local authorities through marketing campaigns and workshops;
- Provide information to the customers through different marketing tactics (direct marketing by sending the customers a letter with information, project communication events and seminars, outbound campaign, etc.).


**Figure 2: Poster of an informative session about the Inovgrid Project by EDP and the installation process that took place the city hall of Alcochete, Portugal**

## 4. Equipment Supply

- Supply equipment to specified locations, e.g. installers' stockroom;
- Stock Management Process: keep stock levels within appropriate levels to avoid disturbance on the installation process.
- Prevent vendor look-in (being dependent of only one vendor for the smart meters supply).

## 5. Installation

### *Technical tips:*

- Work with different installers. This way you can allocate work orders for smart meters installation to different installers for different locations or regions.
- **Installation supervision process**:
  - Verify if installation is within defined criteria by the DSO;
  - Verify that meters' communications with local and central systems is working;
  - Supervise the pace of fieldwork.

Beginning of the **removed equipment analysis' and supervision process**: decide whether the old meter can be re-used or not. Regular meters can be used as reserve equipment's to install at other costumers not yet involved in the smart grid project in the event of malfunctions or fraud for example.

### *Soft skills tips*

- Installers should be trained in soft skills and Brand representative (DSO) skills in order to maintain a linear approach from all field installers, the tool Training installers elaborates on this;
- Installers should take the opportunity of meeting customers face-to-face to clear any existing doubts or questions about the project and offer more information about the project;

### Massive roll out in Spain (PRICE Project, ES)

The PRICE Project in Spain involved the installation of 200 thousand smart meters; 100 thousand by Gas Natural Fenosa and 100 thousand by Iberdrola. Because of the scale of this particular project, teams by both DSO's had to develop roll out plans that would be, in some ways equal, in order to communicate the project key messages and fit the tight deadlines.

More information: www.priceproject.es/en

## Do's and don'ts

- **Group the customers.** The installation planning and supervision is easier if the customers are divided into small groups (for instance, by secondary substation). This practice also helps with the management of the stocks and the installers' teams.
- **Inform the end user about the installation .** First, the utility must inform the customers about the installation of the meter so they feel aware of what is going on. A good practice is to send them a letter explaining the smart grid project itself and the substitution of their meters. In addition, it is customer friendly to provide a quick guide with information during the meter installation. In addition, a more detailed technical guide and more information on the project should be available online.
- **Divide the installation process in phases to learn from your mistakes.** Furthermore, as many projects experienced technical problems that caused delays in the installation phase of the smart meters, a phased roll out is advised. The InovGrid (Portugal) and PRICE (Spain) projects that figure more

than one hundred thousand smart meters opted for a phased installation project approach in several phases, so they could continuously improve on the installation process. At InovGrid, this phases were based on a weekly installation control.

- **Make sure your customer support is up and running.** The utility should be extremely efficient on the response to customer's complaints and questions, especially in the installation phase. A specialized team should be dealt with the task of customer care. For more information, please check the Setting up customer support in a smart grid and Develop FAQs to assist the support staff guidelines.
- **Engage local stakeholders** Also, keep in mind that it is important to create a good relationship with all the stakeholders that can help to resonate the key messages of the project: Local authorities should be involved early on and timely and specialized response to complaints should be implemented. For more information on stakeholder engagement, please visit the guideline How to identify regional stakeholders.
- **Avoid complaints by avoiding times of peak consumption.** The installation should be avoided on the winter peak and summer peak, because the customer will associate the higher bills (due to higher consumption) with the smart meter.
- **Let the consumer get accustomed to more precise readings before the installation of smart meters.** It is not advisable to replace the traditional meters for smart meters without creating a routine for meter readings in the months before the installation. This will get the customer more used to the accurate readings and bills.
- **Document the removal of the old meter.** Do not remove the old meter without the end user's presence and a proof of the last meter readings (it can be a photograph, a signed paper, etc.).
- **Keep old meters for later use.** Finally, the control process of the removed equipment should not be forgotten since the old meters can be used as proof against customer's complaints (it is a good practice to keep them until the first bill with the smart meter readings) and can be used again in the future. If there is no obligation to replace old or current meters with smart meters, old meters can be used as reserve equipment's to install at other customers not yet involved in the smart grid project in the pre rollout phase. In any case, depending on a country-by-country decision basis, there can be about 20% of meters that will not be replaced by smart meters. To keep a number of well-functioning meters in stock to replace malfunctioning ones, this can provide important cost savings. The old meters can also be used to prove the last value of energy consumption registered at the moment of substitution for the smart meter.

## Further reading

- S3C, Deliverable 3.4.
- PRICE Project, http://www.priceproject.es/
- InovCity, http://www.inovgrid.pt/en.

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This guideline was developed in the S3C project, and is freely available from www.smartgrid-engagement-toolkit.eu.

S3C paves the way for successful long-term end user engagement, by acknowledging that the "one" smart consumer does not exist and uniform solutions are not applicable when human nature is involved. Beyond acting as a passive consumer of energy, end users can take on different positions with respective responsibilities and opportunities. In order to promote cooperation between end users and the energy utility of the future, S3C addresses the end user on three roles. The *smart consumer* is mostly interested in lowering his/her energy bill, having stable or predictable energy bills over time and keeping comfort levels of energy services on an equal level. The *smart customer* takes up a more active role in future smart grid functioning, e.g. by becoming a producer of energy or a provider of energy services. The *smart citizen* values the development of smart grids as an opportunity to realise "we-centred" needs or motivations, e.g. affiliation, self-acceptance or community.

S3C (2012-2015) performed an extensive literature review and in-depth case study research on end user engagement in smart grids, resulting in the identification of best practices, success factors and pitfalls The analysis of collected data and experiences led to the development of a new, optimised set of tools and guidelines to be used for the successful engagement of either Smart Consumers, Smart Customers or Smart Citizens. The S3C guidelines and tools aim to provide support to utilities in the design of an engagement strategy for both household consumers and SMEs. The collection of guidelines and tools describe the various aspects that should be taken into account when engaging with consumers, customers and citizens. More information about S3C, as well as all project deliverables, can be found at www.s3c-project.eu.