



French gas smart meter roll-out project: first step toward smart gas grids and smart cities

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Key figures

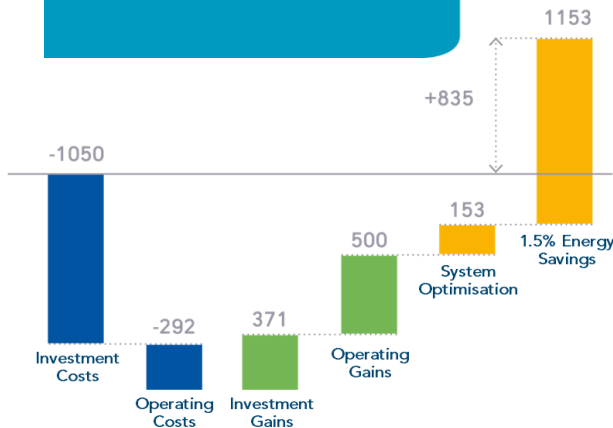
GRDF is a leading operator in the energy sector and an expert in the gas energy field. It is the main operator of the French natural gas distribution network.

11 millions of customers

Gas network: 198 886 km

More than 9500 municipalities

Business Case results



Smart meter roll-out project

- ~1 billion EUR investment
- CAPEX and OPEX costs are financed by the distribution tariff with an impact of less than 1,3% on the level of the distribution tariff
- The project is at the end largely **profitable** for the customers **(+835 M€) thanks to energy savings expected.**
- We believe that globally a mere **1.5% energy savings** is highly possible thanks to frequent consumption data. Compared to UK project hypothesis of 2%, GRDF's 1.5% is quite **a prudent hypothesis.**
- The first results show a 5% energy savings for "smart" customers
- **More than 700 000 smart meters rolled-out at the end of 2017**

POYRY – SOPRA Business Case Summary from February 2013
Data in M€ 2013 with different updates according to actors



11 Millions of smart meters to roll-out between 2017 and 2022

Project Goals and Calendar

3 major objectives

Enhance customer satisfaction



Automatic and daily reading of gas consumption data

Improve Energy Management



Increased delivery frequency of consumption data from 2 readings per year to daily readings

Optimize Network operations



Modernization and performance of gas distribution network

Timelines



Experimentations



Framework setting



Construction



Roll-out Pilot



Mass roll-out

2010 2011 2013 2016 2017 2022

- ✓ **Pilot** : about 160,000 meters equipped
- ✓ Gradual **commissioning** on 2 years

- ✓ Industrial **regime** in 3 years
- ✓ Controlled **decrease** during the last year

Services offered to customers

As part of its role as a provider of public services, GRDF gives its 11 million customers free access to their natural gas consumption data

✓ **Access daily natural gas consumption data on Mon Espace GRDF** (personal online space) **with services to help clients save energy**



- Set **consumption thresholds** and receive an alert when it is exceeded
- **Compare the consumption** to other similar households to get a better idea
- Benefit information on **outdoor temperature** to have a better understanding of consumption variations



- Receive **hourly consumption data** (optional service)
- Transmit daily data to **energy service providers** of your choice to benefit new services



➤ *Customers also have free access to the metering device external plug (i.e to plug an energy box)*

✓ **Monthly consumption data are communicated to energy suppliers, in particular for billing** (twice a year before)



Readings are taken automatically, so there is no longer need for customers to wait for a technician to come

Players' roles to achieve better demand side management to benefit clients



Smart Meters

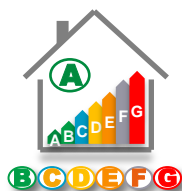
providing data at appropriate frequency corresponding to customers' needs

DSO
ROLE



Suppliers accompanying end-consumers through individual analysis of their consumption and **ergonomic, educational and multi-fluid tools**

SUPPLIERS
ROLE



Local Energy Efficiency market players supplementing project package by fostering actions through a better use of consumption data

LOCAL
GOVERNMENTS and
HOUSING
ASSOCIATIONS
ROLE

With a broad and continuous consultation of many stakeholders



A local dialogue led in the 4 pilot areas

Local Dialogue stakes

- Informing the stakeholders and their audience on the different operational aspects of the project
- Co-building the communication tools for the roll-out
- Building awareness on the project's stakes in energy management



Various stakeholders



Local authorities



Consumers and renters associations



Gas industry



Public housing landlords



Energy suppliers



Public institutions



Professional representatives

Technical performance

Those experimentations allowed us to confirm our convictions and to define the optimal solution design

Convictions



Proven equipment, reliable and lasting
for a 20-year lifetime



A **two-way solution** to answer future needs
(upgradeability, scalability, interoperability)

169
MHz

Optimal number of equipment to deploy
in field (no repeaters)



A **simple and open solution** ensuring
economic balance

Drops

**Systematic
Remote Shut-Off
Valve**



**Systematic
Display at Hand**

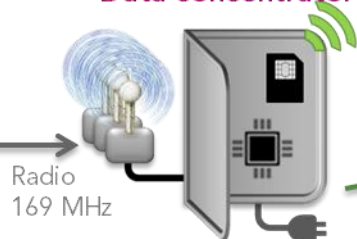


A simple, robust and reliable technical solution

Smart meter



Data concentrator



GRDF IT system



Radio
169 MHz

2G/3G

Metering (index, flow) **and supervision data** (battery, anti-fraud)

Storage for a couple of days

Data Transmission **twice a day for less than a second**

Radio frequency: **169 MHz**

Temporal and spatial redundancy

Encrypted data transmission

Index data collection

Storage for a **couple of days**

Interoperability with several types of meters

Data Transmission **several times a day**

Emission **on concentrator initiative**

Protection of exchanges

Data collection and management

Supervision and system management

The Alliance aims to promote and develop the use of a 169 MHz low-power / long range / wide area radio network

Next steps: fostering energy transition and dealing with french energy goals at the community level



- 1 2 Managing huge amounts of biomethane (Biomethane Goal: 30% of gas consumption in 2030) in the gas network.
- 3 4 Real time monitoring and operation of the the gas grid
- 5 6 7 On the downstream side, improving energy savings for customers with smart meter, fostering performing gas technologies with new boilers, developing NGV stations

Thank you for your attention

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