



GRDF

GAZ RÉSEAU
DISTRIBUTION FRANCE

Smart Meters Roll Out



Introduction

- 1. Smart Meters Project based on Energy Efficiency**
- 2. Smart Meters Services**
- 3. Smart Meters Roll Out**
- 4. Technical Solution**

Index reading today in France

Tarifs	T1/T2	T3/T4/TP
Conditions of reading	Half yearly (6M)	Daily or Monthly (JJ / MM)
Number of Clients	~ 11 Millions (99%)	~ 106 000 (1%)
Delivered quantity	50%	50%

Annual consumption of reference (MWh)







T1: Less than 6

T2: Between 6 and 300

T3: Between 300 and 5000

T4: Higher than 5000

Smart Gas Metering in Europe

Member State	% of household using NG	Meters \leq G6 ($\leq 10\text{m}^3/\text{h}$)	Smart Gas Metering rollout period		Penetration rate % by end rollout	Responsible party for rollout	Remote reading	Remote control of valve
EIRE 	37%	650.000	2022	2026	100%	DSO	Y	Y
FRANCE 	38%	11.000.000	2014	2020	100%	DSO	Y	N
GB 	81%	22.600.000	2012	2020	100%	SUPPLIER	Y	Y
ITALY 	82%	22.900.000	2010	2018	50%	DSO	Y	Y
LUX 	45%	90.000	2018	2020	95%	DSO	Y	NA
NL 	95%	7.600.000	2024	2020	95%	DSO	Y	Y

Source:
MARCOGAZ 2016
– Eurogas 2015
Eurogas 2016 -
Anigas 2017

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To the benefit of GRDF 11 million customers (households, small-businesses, municipalities)

3 major goals

Improve customer satisfaction



Automatic and daily reading of gas consumption data

Improve Energy Management



More frequent consumption data

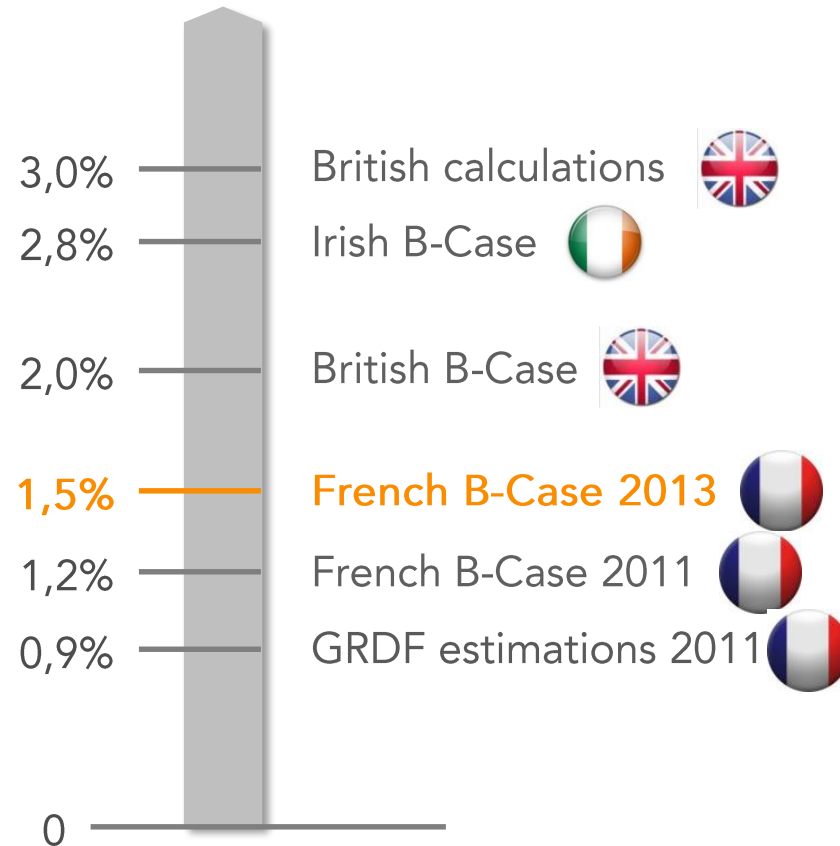
Optimize distribution network



Modernization and performance of gas distribution network

Project driven by Energy Efficiency

A conservative assumption to secure expected benefits



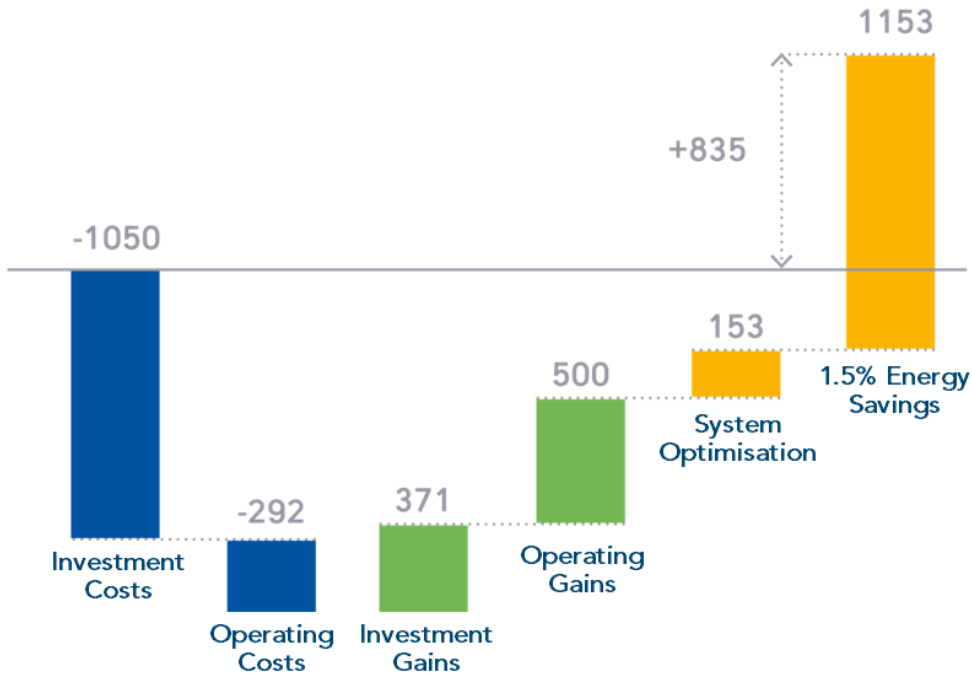
Source : Cost Benefit Analysis CRE / Pöyry-Sopra, March 2013

Additional savings are expected thanks to the **development of new energy management services** by energy suppliers, consultants, appliance installers / manufacturers...

Project business case

An overall profitable project with a mere 1.5% energy savings assumption

Business case results



- The overall investment cost is about **1 billion euros**.
- CAPEX and OPEX costs are financed by the tariff.
- The project is at the end largely **profitable** for the society (**+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**.

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

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Services offered to customers

- ✓ **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

Services offered

Do's



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

Dont's

Systematic Remote Shut-Off Valve



Systematic Display at Hand



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A simple, robust and reliable technical solution



Gas Meter +
radio module

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

Storage on a
couple of
days

Data
Transmission
twice a day for
less than a
second



Fixed radio
Network

169MHz
bandwidth

Temporal
redundancy

Spatial
redundancy

Encrypted
data



Data
Concentrator

Index data
collection

Storage on a
couple of
days

Supervision
data
(concentrator
status)

Interoperability
with several
types of meters



Operator



GPRS
network

Data
Transmission
several
times a day

Emission **on**
concentrator
initiative

Limitation of
bandwidth **and**
protection of
exchanges

National data
collection and
management system


Data
collection and
management


Supervision
and system
management

Industry of excellence

A French industry of excellence

Manufacturing and / or assembly

 Smart meters

 Concentrators

SAGEMCOM

Dinan (Côtes d'Armor)



kerlink
communication is everything

Vire (Calvados)



SAGEMCOM

kerlink
communication is everything

Itron

DIEHL
Metering

Itron

Reims (Marne)



DIEHL
Metering

Rixheim (Haut-Rhin)



2 options for the metering system



Powered by a lithium battery (lifespan: 20y)

Summary

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Optimized time schedule for a gradual set-up

11 billions of smart meters to be deployed in 6 years (budget for 1bn€)

A 150,000 meters pilot spread on one year, then 11 million meters spread on 6 years and an accelerated schedule for concentrators to ensure full coverage of the territory

Roll-out planning

2015 – 2016 : **Pilot**
2017 – **2020** : Concentrators roll-out
2017 – **2022** : Smart meters roll-out

Evolution

Pilot : 150,000 OTP equipped in 1 about year
Gradual **commissioning** on 2 years
Industrial **cruise regime** in 3 years
Controlled **decrease** during the last year

Update as of December 31st 2017



~700 000 smart meters (only 8 months after the launch of mass roll-out)

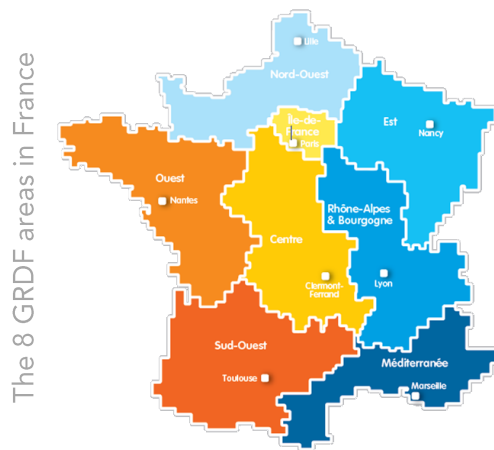
~ > 80 000 meters installed / week



~1500 concentrators

Parallel deployments in all regions

and which associates all customers



The 8 GRDF areas in France

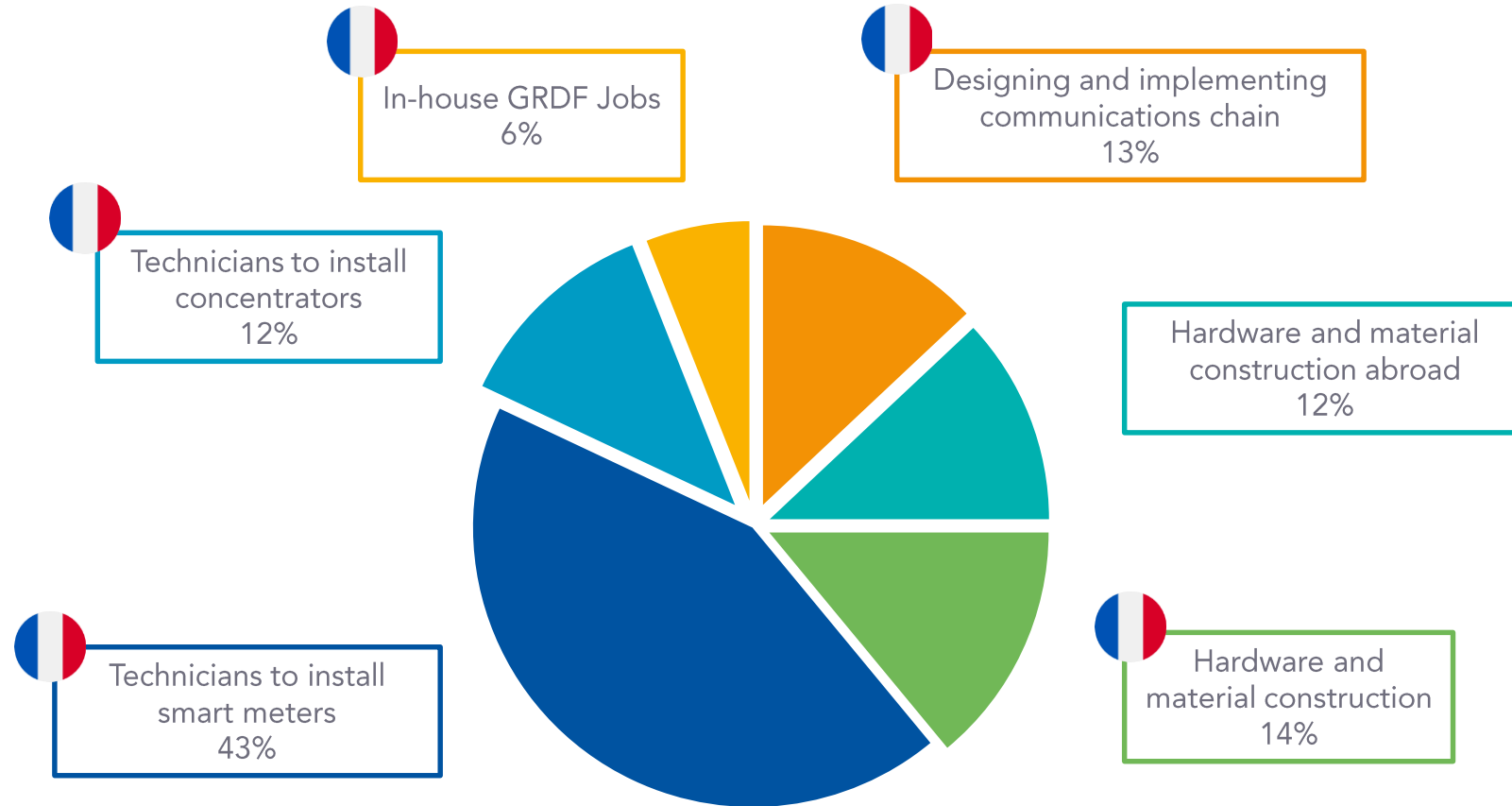
Goals	<p>▶ 11 millions meters and 15,000 concentrators Externalizing 85 to 90% of the roll-out</p>
Organization	<p>▶ ~ 20 local deployments in parallel with a dissemination</p> <ul style="list-style-type: none"> • through gradual geographic saturation • then through « oil stain » principle <p>Regional steering (x 8)</p>

Roll-out objectives

- Respect **roll-out schedule** and **costs**
- Confirm ASAP **energy demand savings** as expected in the Business Case
- Promote **local employment**

Positive consequences on employment

1,500 direct jobs created, almost 90% in France



Development of new services in energy management will also generate numerous indirect jobs

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

Thank you for your attention !

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