ofgem Promoting choice and value
for all gas and electricity customers

Smart meters, regulation and market development

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INTRODUCTION

Ofgem

- Our role in general:
  - Independent regulator of gas and electricity markets in GB
  - Principal objective to protect the interests of current and future gas and electricity consumers
- Our role on smart meters:
  - Nurture smarter energy markets from the platform of smart metering by:
    - advising Government on rollout regulatory design
    - Preparing for new regulatory functions
    - Scoping consequent reform areas to capture opportunities and manage risks for consumers

What is a smart meter?

- Supply of electricity and gas must legally be taken through a meter
- The basic form of meter is called an accumulation meter
  - it registers accumulated volumes
  - data is gathered by reading the register manually
- A smart meter is an accumulation meter with added functions, e.g:
  - allowing data to be gathered remotely
  - allowing data to be processed or stored at or via the meter
  - allowing instructions to be sent through the meter
- No standard definition - “Smart meter” captures any combination of these additional functions

Legal framework for GB smart meter rollout

- UK Parliament has legislated to mandate the rollout of smart meters
  - Energy Act 2008
  - Enabling powers for Secretary of State to create new regulatory obligations on energy companies and to award a new type of licence (for Data and Communications)
- European Directives
  - Require 80% coverage of smart meters by 2020, conditional on a positive IA

THE GB ROLLOUT DESIGN

Key facts

1. ~ 53 million meters and 30 million households
2. Programme led by Department of Energy and Climate Change
3. To be delivered through regulation, not Government expenditure
   - Costs borne by energy sector companies
   - And recovered via bills to energy consumers

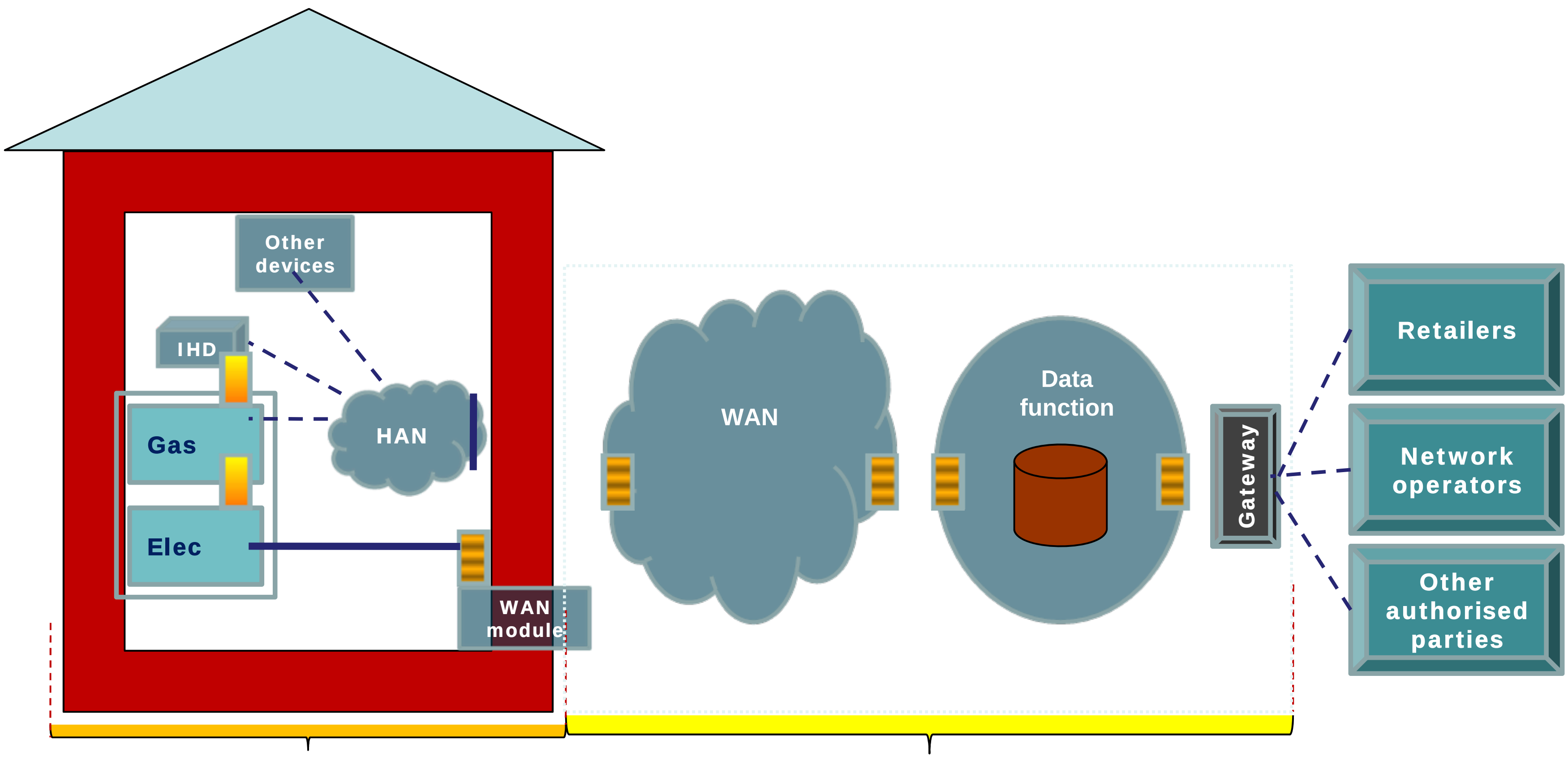
- Mass rollout planned to start in 2014
- Target completion date is end 2019
- Regulatory “building blocks” in place in next 6-12 months
- Two large suppliers (British Gas and E-on) already committed to significant early rollout

Key design features of GB rollout

1. Energy retailers are responsible and accountable for rolling out smart meters to all customers (by 2019) - subject to limited exceptions for some types of non-domestic customers
2. All domestic customers must also get a display device
3. Monopoly central provider of data and communications (DCC)
   – Independent from both retailers and its service providers
   – Regulated by Ofgem, licence awarded competitively
4. Open, non-proprietary standards for elements of mandated metering system in the home, including in-home display (IHD)
5. Consumers control the use of their data

Policy decisions made by HM Government
March 2011

GB smart meter rollout – an overview

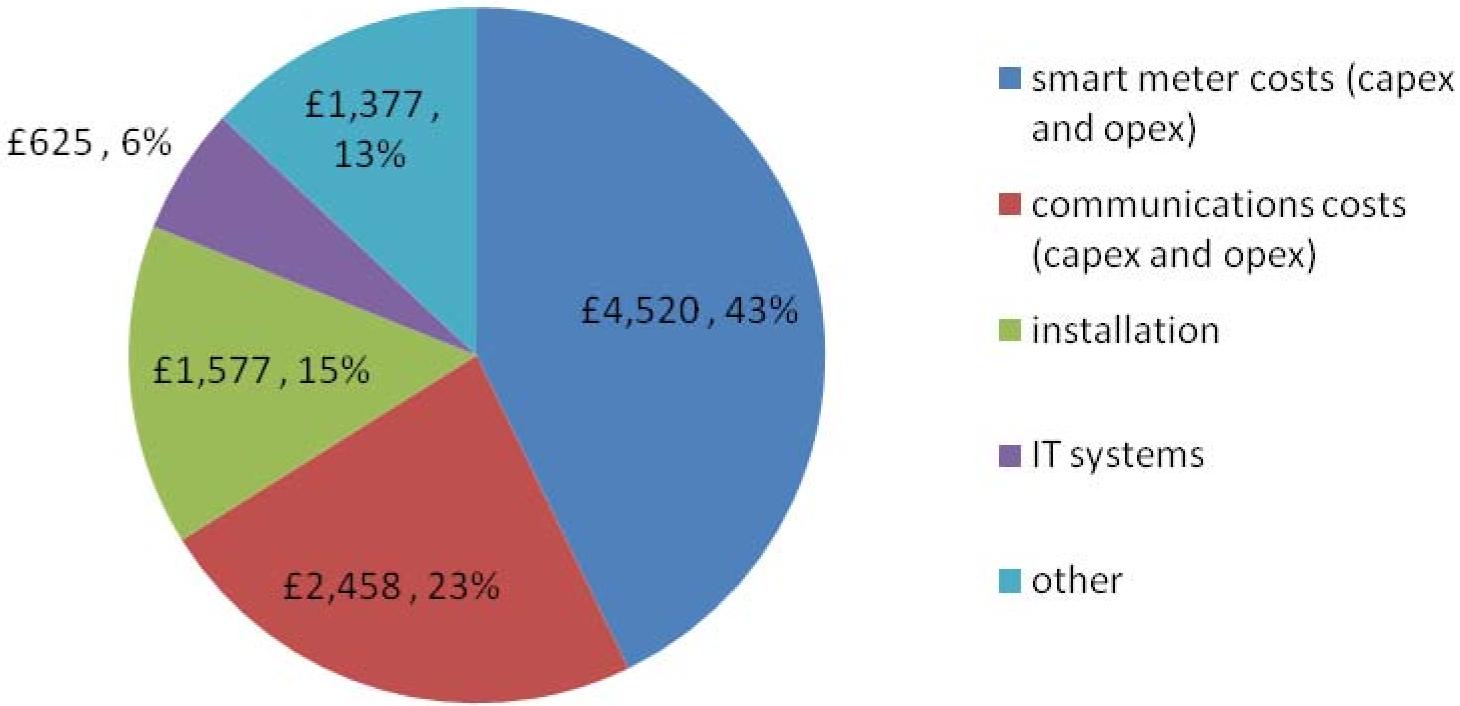


Regulatory obligations on energy suppliers to roll out in-home equipment by 2019

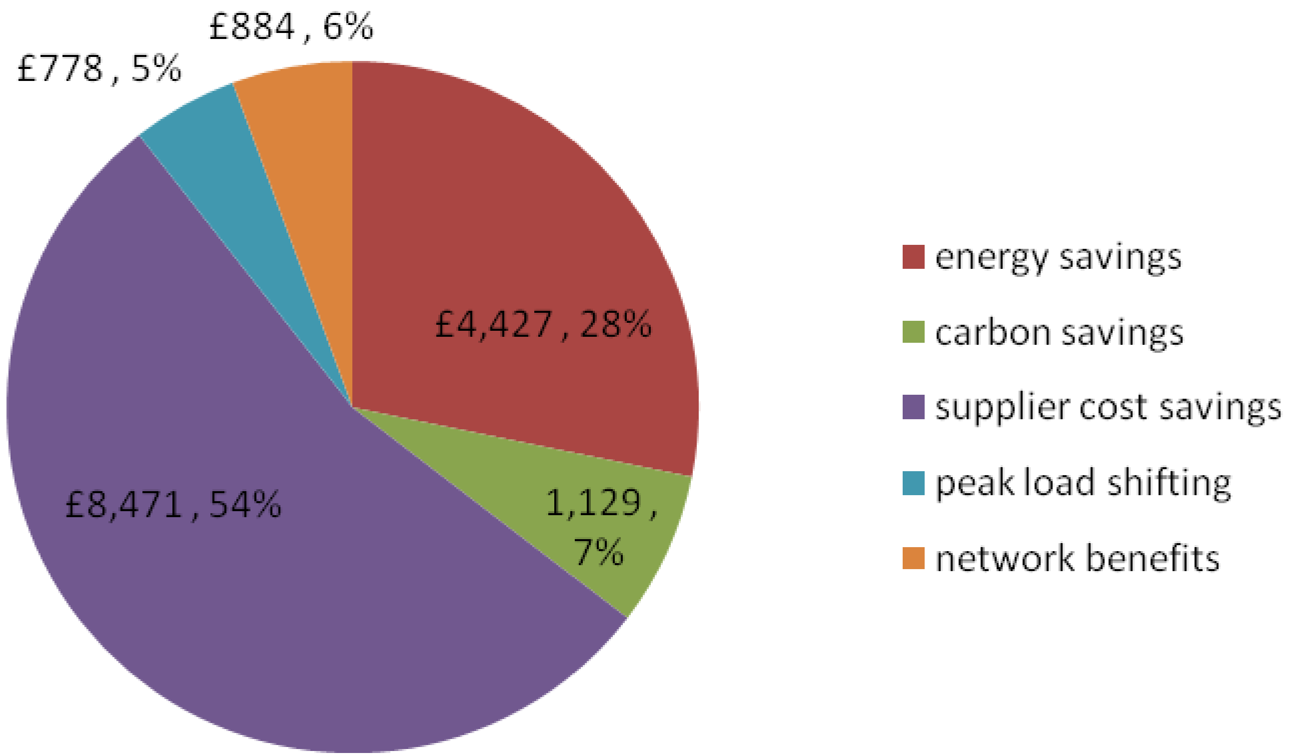
Data and communications managed by new regulated monopoly Data & Communications Company (DCC)

THE GOVERNMENT'S IMPACT ASSESSMENT

Government IA for domestic rollout: Spending £10.9bn...



… to capture £15.7bn of benefits



Some observations to illustrate the debate..

From the prosecution

- “It is a Government procurement – costs are bound to blow out”
- “It would be a whole lot cheaper if we gave the gig to the networks and did not centralise comms”
- “People will not change behaviour to save a few quid a month”
- “Costs will flow through to energy bills, but benefits will stay with energy retailers”

..and the defence

- “When you unpack it, you realise that competitive disciplines are pretty strong on the major cost items”
- “Consumers can and do engage with better information and tariffs – just give them a chance”
- “Network benefits are understated”
- “Options created by smart metering are not recognised properly”

MAKING THE REGULATORY DESIGN WORK FOR CONSUMERS

Keeping costs to efficient levels

Metering equipment

- Supplier-led
- Mandated open and non-proprietary standards for kit to support interoperability

<u>Questions</u>

- How do incentives vary between suppliers and distributors?
- Do you need to regulate suppliers, and what tools have you got?

Communications

- Structural separation of data users, procurer/contract manager (DCC) and DCC service providers
- Periodic re-tendering of WAN and data contracts by independent, regulated entity (the DCC)

<u>Questions</u>

- How to co-optimise WAN and meter rollout?
- How to regulate evolution of new DCC services?

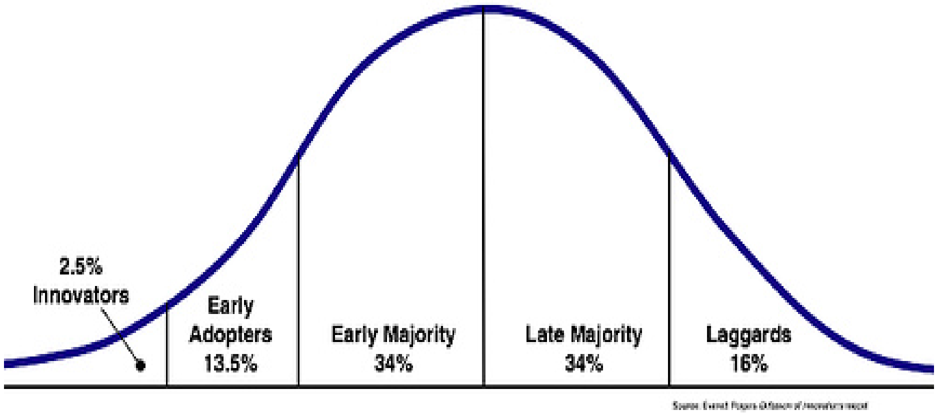
Engaging consumers to change behaviour

Centralised

- Role for central body, but
  - (a) Scope?
  - (b) Funding?
  - (c) Regulation?
- Mandated provision of display device
- Learnings from consumer-funded trials, e.g. Low Carbon Networks Fund (LCNF)
- Evolving regulation

Decentralised

- Installation visit
- New tariffs
- New services/technology
- Advertising
- New entry



Data access regime is critical because...

Privacy

- Trust ⇨ acceptance
- Acceptance ⇨ engagement
- Acceptance also affects costs
- Rules can build (and lose) trust

Competition

- Data from smart meters are commercially valuable
- Rules on access therefore involve value transfers
- Differential access rules are likely to skew competition
- Non-discriminatory access on reasonable terms – seen as essential for transmission and distribution. Maybe data too?

SMART METERS AS ENABLER FOR TRANSFORMATIONAL CHANGE

Smart metering as an enabler – but of what? and is it worth it?

Smart meter rollout

Measure energy use in very small time blocks in near real-time

→ Information

→ New types of tariff for energy use

→ Contracts for firm changes in energy use

→ **A new demand curve?**

Enables smarter central 'back office' functions

- Settlement
- Registration
- Switching

Some real options embedded within smart meter rollout

1. Settling the wholesale market quickly and accurately
2. Reliable next-day (or quicker) change-of-supplier
3. Time-contingent tariffs and contracts for (or related to) energy use
   - Time-of-use tariffs
   - “Micro-DSR”
   - Distribution charging

All possible now but with very different transaction costs

These options have been bought already (although treatment in IA is unclear) – more interesting questions are about whether, when and how they get exercised

Factors affecting the value of exercising some of these options

Markets

- The (carbon inclusive) value of deferred or avoided investment in alternative forms of capacity
- Changes in form and level of electricity demand – EVs, heat
- Extent to which current market processes constrain alternative business models – and hence market entry
- Nature of energy security risks
- The amount of new information revealed by pricing what is currently not priced

Networks

- The costs of handling local network issues
- Level and location of network problems associated with intermittency

An aside: Micro-DSR has some added complications

1. What is the property right around which parties are transacting?
2. Who contracts with who?
3. What should distributors be permitted to do – and how do you avoid foreclosure, rent capture or sterilised capacity?
4. How long can a commercial framework based on bilateral contracting endure?

NEXT STEPS

Next steps

1. Ofgem is consulting on how to define and constitute a programme of work to support ‘smarter energy markets’ – next document in July.
2. It is a wide-ranging and complex set of policy issues
3. And an area ripe for economic analysis
4. The impacts will be long term – and could be transformational

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