Smart Metering & Demand Side Response in the UK
Case Study: Customer-Led Network revolution

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As a smarter grid evolves, energy suppliers’ role is to deliver maximum value for our customers

Allow customers to easily install renewable and low carbon technologies

Keep the risk of supply interruption low, in the most cost-effective way possible

Ensure flexibility services help to keep the costs of reinforcement low and customers are rewarded for any DSM action
It is important we do all we can to keep our customers’ bills down...

...but a large proportion of the bill is outside our control

Right now customers cannot control any individual part of their bill and have limited options if they want to influence it at all

*Based on actual 2011 results, is an average of all payment types/tariffs/regions and is based on consumption levels of 443 therms for gas and 3,805 kWh for electricity*
Smart Grids could allow us to give our customers control over more of these costs.

- Reduced transmission and distribution costs
- Avoid unnecessary network reinforcement costs
- Access to cheaper wholesale prices
- Uptake of renewable and low carbon technologies
- Security of Supply

Saving, Shifting, Home Automation, Intelligent Controls, Smart Appliances, Load Balancing, Microgeneration.
Smart meters are the entry point to a smart grid and our smart meter roll-out starts with the customer

**Vision:** Transforming our relationship with customers and their relationship with energy

#1 Reinvent the customer experience to drive a positive perception of smart

#2 Deliver the optimal roll-out

#3 Lay the foundations for the smart connected home
British Gas is looking to bring the benefits of Smart Metering to our customers as early as we can

Over 1,300,000 smart meters now in Britain’s homes and businesses

Every 2 mins
We install a smart meter in Britain

1,200
trained SEEs upgrading nationwide

Over 45,000
Customers interviewed to help us improve our offering

Almost 100%
of smart bills are based on actual meter reads

+40% Improvement in NPS satisfaction v standard, plus fewer complaints & calls
Our latest customer research has identified 9/10 smart meter customers now take simple daily steps to reduce energy use in the home.

Smart meter customers can see how their energy efficiency efforts are reducing their energy consumption.

40% have been encouraged to tackle wider energy efficiency issues in their home since having a smart meter installed. Including:
- Installing insulation
- Turning off appliances when not in use
- Energy efficient light bulbs
- Energy efficient appliances

79% of customers using their smart energy monitor are now more aware of their energy consumption.

9/10 British Gas smart meter customers are now taking simple daily steps to reduce their energy use. Such as turning off appliances when not in use.

64% of those people identified savings of up to:
(6% of average British Gas dual fuel bill)

£75 of those using their smart energy monitor have saved money off their energy bill.
Customer-Led Network Revolution
The UK’s largest LCNF Smart Grid Project

A £54m programme of technology and customer engagement focussing mainly in the North East running from 2010-2014

**LO1**
- Current, emerging and possible future load and generation characteristics.

**LO2**
- Extent to which customers are flexible in their load and generation, and the cost of this flexibility.

**LO3**
- Focus on network technology
- Evaluates the extent to which the network can be more flexible, and the cost of this flexibility.

**LO4**
- What is the optimum solution to resolve network constraints driven by the transition to a low carbon economy?

**LO5**
- What are the most effective means to deliver optimal solutions between customer, supplier and distribution network operator?
Our 22 Customer Trials involve a range of Low Carbon Technology

Residential Trials

SME Trials

Trial type:
- F: Flat tariff trial
- S: Smart time of use tariff trial
- D: Direct control trial
- E: Economy 7 / 10 trial
- T: Trial technology
High quality communications material helped us recruit and maintain over 14,000 customers.
We are trialling 4 types of DSR using smart meters, smart tariffs and appliance automation

**Smart Time of Use Tariff**
- Smart Meter + IHD
- 2020 cost profile
- -4% Day Rate
- +99% Peak Rate
- -31% Off-peak rate
- 16p Standing Charge

**Restricted Hours**
- Smart Appliance Automation
- Time of Use Tariff
- Simulated CAD
- Customer Override

**Within Premises Balancing**
- Automatic balancing
- Excess Generation to heat hot water
- Manual balancing
- Real time IHD info on Generation, Consumption and Export

**Direct Load Control**
- Appliance Automation
- Up to 15 interruptions
- Up to 4 hour events
- 1 interruption per day
- Up to 10 consecutive days
- Customer override
- DNO>Supplier>Appliance>Customer control
Preliminary results on the Time of Use tariff trial points to peak as well as overall reduction throughout the week

- ToU weekday peak consumption has fallen by 13.7% vs. 4.0% in the Control Group,
- Overall consumption for the Control Group has fallen by 3.91% but the ToU Group has fallen by 5.43%
- Behaviour persists into the weekend with a 8.2% reduction in peak for the ToU group vs. 5.2% in the control group
- Compared to Standard, 60% of TOU customers saved an average of £31 over the trial, whereas 40% lost an average of £24
- 95% of trial participants said they would choose a multi rate tariff over a standard tariff if it were available post-trial

*Analysis based on average start date July 12 – March 14
CLNR has allowed us to explore future energy services through innovative Customer Trials

Customer-Led Network Revolution

- Time of Use Tariffs
- Tariff/Tech Energy Reports
- Appliance Automation
- In-Home Balancing
- Storage & Demand Side Response
Key takeaways

- Smart Metering could be the customer gateway to a Smart Grid, allowing homes and businesses to take control over not just how much they use, but when they use it and how much they pay for it.

- Customer-led approach to smart metering can lead to greater customer satisfaction and reduced cost to serve with lower customer complaints.

- The CLNR tariff had an overwhelming positive response from customers despite the high peak price.

- The tariff led to a reduction in peak consumption, which persisted through the trial.

- The ToU effect on consumption reduction is significantly higher than having a smart meter and IHD on their own.

- Customer savings on ToU are lower than might be expected and some customers could lose money.

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More info: www.networkrevolution.co.uk