

# Financial implications of Smart Meters



Will Smart Meters save money?

The International Monetary Fund states that there is the possibility of a double-dip recession in many advanced economies and advocates the need to reduce risk in investments (IMF 2011). Smart Metering risks should be reduced wherever possible to increase their viability. Strategic rollouts could reduce such risk.

## The rules of investment

*"Investors should start with a view of skepticism. They should become intellectual investors rather than emotional investors. They should be careful, and they should be skeptical."*

Arthur Levitt, Jr.

Senior adviser at the Carlyle Group and former Chairman of the US Securities and Exchange Commission.

## Cost impact

For indications on the cost impact in the UK of a number of different Smart Meter options, including that of a dumb meter/smart box option, refer to MMDB (2007).

Consumer Impact with four roll-out options and Hybrid 2		
Roll-out option/ Technology	Consumer Net Present Value	Average Annual Impact per meter
<b>New, Replacement and Voluntary</b>		
ERA Spec	- £8,287,000,000	- £8.29
BEAMA Spec	- £4,276,000,00	- £4.3
Dumb+Smart	+ £343,000,000	+ £0.48
Meter Retrofit	+ £982,000,000	+ £0.85
Clip-On	+ £617,000,00	+ £1.05

Source: MMDB (2007) – other options such as fibre-optic Smart Metering should additionally be appraised.

**At present Smart Metering is listed as the least financially attractive**

investment of all smart grid initiatives (N-ERC 2011).

## World market

As the World faces a prolonged period of austerity (IMF 2011), and the possibility of redundancy increases at an alarming rate, it is necessary to show that Smart Metering does not place further burden on those facing hardship. In such troubled times, people need robust proof of the benefits to themselves of 'opting in' to such programs. Alternative ways of reducing energy consumption, such as through optimised building design and the creation of more energy efficient appliances, too need to be championed.

The possible costs and benefits of different Smart Metering systems in terms of health, productivity and the environment should also be factored into the equation, so that optimum solutions are developed. Human Rights issues too have to be factored in.

Another matter to be taken into consideration is the cost to nations of upgrading utilities' IT infrastructures - *which often currently run on a mix of old computing systems that often do not properly communicate with each other* - for the huge onslaught of data information they will be receiving from Smart Meters (Antow 2011).

There is also the question of whether some of the money currently earmarked for Smart Metering should be diverted to the creation of grids that are more secure against the harsh solar storms NASA predict for 2012-2014 which could severely damage infrastructures and national economies – *Refer to the section on 'Vulnerability to Space Weather'*.

## UK installations

The UK deployment of Smart Meters is already set to become the most expensive in the world (Datamonitor 2010). It has been rumoured that at present Smart Meters will cost around £350 to install per household (Anderson & Fuloria 2010).

In March 2011, UK energy customers were told they would have to pick up the £11.3 billion rollout cost through their bills (uSwitch.com 2011). This may cause some resentment, as a survey of consumers in 2010 revealed 83% were not prepared to pay additional costs for their installation (Which 2010). *Before* that press release, only 15% of the public had welcomed their introduction (uSwitch 2010) - *it is vital to have the public's support for Smart Meters to succeed*.

*At present consumers appear more concerned with the financial costs of using them than the environmental cost of inefficient energy use.*

*The DECC estimates that Smart Metering will “result in an increase in annual domestic energy and gas bills for the average dual fuel customer of £6 by 2015 but by 2020 it will deliver a net annual saving of £23,” NAO (2011).*

At present smart grid systems have a life expectancy of 10-20 years (Mills & LaMonica 2010). If consumers have to meet the full installation cost, it might take them 15 years worth of savings (*at the returns predicted for 2020*) to pay for a Smart Meter that may require replacing within that period or have already been replaced.

*This figure does not take into account loss of earnings from having to stay at home on the day of meter installation – the average daily wage in the UK at present is just under £100 (ONS 2010) - or the potential costs that inappropriate Smart Meter specifications and rollout timings might have on the national economy.*

There are also additional consumer costs that have to be taken into account. To obtain the major benefits of Smart Metering consumers will have to spend further money on communications devices, programmable communicating thermostats, appliance chips and other automated equipment (in addition to paying directly or indirectly for the Smart Meter units). Computers and high-speed Internet connections also appear essential to optimise operation (TURN 2011).

*“If consumers don't reduce usage then the [Smart Meter] system becomes an expensive white elephant.”*

*Jon Lane, Energy Director at The Datamonitor Group\**

\*Datamonitor is a world-leading provider of premium global business information, delivering independent data, analysis and opinion.

*There are also concerns that the project could be as technologically challenging as NHS National Project for IT (Flinders 2011), which further indicates the need for the UK to increase its knowledge base to better address matters and allay public concerns. Initiatives such as SmartGrid GB (SG GB 2010) may prove very timely.*

## USA

In some instances huge rises in bills have been reported primarily due to faulty Smart Meter units, inappropriate billing systems, shortcomings in consumer education and unusual extremes in weather conditions prompting extra energy usage (Burbank ACTION 2011, CBS 5, Zeller 2010). It seems these matters can be remedied. Some overcharging was additionally caused by units mistakenly charging customers for the units of electricity they generated (via green technologies such as solar panels) and fed back into the grid (Wolff 2010). This fault too now appears to be corrected.

The actual costs to some consumers as related to apparent health issues from some types of Smart Metering regimes and from faulty Smart Meter installations that have caused fire damage to their properties remains to be addressed – Refer to sections on ‘*Health Matters*’ and ‘*Electrical safety and Smart Meters*’.

## California

The annual report PG&E submitted to the California Public Utilities Commission (CPUC) on their Smart Meter program shows that to date no energy savings have been made as a result of their large scale Smart Meter rollout (PG&E 2011).

**Table I PG&E SmartMeter™ Program Enabled Demand Response Programs Subscription Statistics December 31, 2010**

Program	Service accounts	Demand reduction (MW)		Energy savings (MWh)		Total financial benefits (thousands)
		Aggregate Load Impact	Financial benefits (thousands)	Energy savings	Financial benefits (thousands)	
Demand response						
Programmable Communicating Thermostat	0	0	\$0	0	\$0	\$0
Peak Time Rebate	0	0	\$0	0	\$0	\$0
SmartRate™/ PDP	24,535	6.5	\$546	0	\$0	\$0
Real Time Pricing (RTP)	0	0	\$0	0	\$0	\$0
Time of Use	0	0	\$0	0	\$0	\$0
Total	24,535	6.5	\$546	0	\$0	\$0

Source: PG&E (2011).

The Division of Ratepayer Advocates of the CPUC believes that the \$1 billion Smart Meter program for the Southern California Gas Company (SoCalGas) “*will cost ratepayers \$185 million more than the benefits to be produced over the project’s lifetime*” (DRA 2010).

## SMART METERS - SMARTER PRACTICES

*“There is no compelling reason to move ahead with this expensive project, especially at a time when Southern Californians are already struggling to pay their bills and with unemployment so high.”*  
Dana Appling, Director of DRA (DRA 2010).

As noted by TURN Consumer Advocates, *“The cost of retrofitting or replacing existing appliances alone will be astronomical. Without the expenditures, consumers will not see any difference from the new meters except higher electric bills. ... The meters have failed to provide customer benefits commensurate with their costs,”* (TURN 2011).

The Helix Water Board has decided to reject Smart Meter technology on the grounds of cost. With Helix undergoing budgetary restrictions they decided it was not appropriate to introduce Smart Meters.

Additionally, there was a lack of public interest shown in the web portal set up for their Smart Meters in a pilot study. Of the 28 registered users, 9% of pilot customer accounts, only three visits per week were registered after an initial 20 visits per week (Suzuki 2011). Health concerns and Human Rights issues had also been raised. Such matters must be addressed and solutions recognised.

### Connecticut

In Connecticut, Attorney General George Jepsen stated that the utility’s plan to replace existing electric meters with advanced technology *“would be very expensive and would not save enough electricity for its 1.2 million customers to justify the expense.”*

Jepsen urged regulators to *“continue to evaluate emerging meter system technologies as well as other conservation programs”* and only sanction installation of advanced meters when they are proven to be cost effective.

*“The pilot results showed no beneficial impact on total energy usage, ... the savings that were seen in the pilot were limited to certain types of customers and would be far outweighed by the cost of installing the new meter systems.”* Attorney General George Jepsen.

Jepsen calls for a *“surgical”* approach in the brief where Smart Meters are only provided to those who request, and can pay, for them (Tweed 2011). The creation of more energy efficient devices would also be of benefit.



## Developing Countries

In Chile, it has been claimed that the costs of installing Smart Meters are “*greatly surpassing the benefits, principally because of the initial capital investment costs.*” Ramila & Rudnick (2010) further claimed that installed Smart Meters benefitted “*society as a whole, but not ... customers within the area of installation, who originate the benefits and pay for the meters.*”

Stromback & Dromacque (2010), talking of Brazil, noted that those on very low incomes may need to be exempt from paying for Smart Meters, indicating once more the benefits of finding other ways to finance such projects if they are to be a success with all consumers.

The VaasaETT Global Energy Think Tank suggests that Smart Meters are “*not necessarily appropriate ... for developing nations, or those where household consumption is low.*” Concerns were also raised about how resilient the technology may be to climates such as Brazil’s (Stromback & Dromacque 2010).

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## SMART METERS - SMARTER PRACTICES

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It appears imperative that Governments, States and individuals make fully informed decisions on Smart Metering issues as related to their true costs, as determined by Cost Benefit Analyses (CBAs) which take into account issues noted in this present review document.