

# High Tech Energy Savings: Paradise Postponed?

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# Who?

A personal view

## The Promise

2014:

Google acquired one of the most promising home energy management companies, Nest for USD3.2 billion and there were a number of other large investments made in the sector.

The core case for smart meters appeared sound – they could enable more accurate billing and reduce energy usage – a win-win and especially important in light of carbon reduction targets

## Bumps in the road

Momentum appears to have reduced since 2014



- investments such as Google's are now being questioned.
  - in its 2014 update, the EU stated that 72% of European consumers would have smart electricity meters by 2020 (in an apparent downgrade of the earlier 80% figure.)
- some EU member states have concluded that the business case for smart meters doesn't justify their widespread rollout

## Bumps in the Road

### A more fundamental issue

- EU focus more on **cost** savings than energy savings, (saves on cost of reading meters)
- assumption that smart metering helps select more suitable tariffs for consumers
- But this too has been called into question recently, with recent figures suggesting only a 2.8% saving in electricity consumption.
- Reports suggest user engagement with the in-home display drops off after an initial period of interest, leading to suggestions that savings may be even less.
- Ovo Energy reported more than 60% of installed home energy usage displays were inaccessible a year later.

## Bumps in Smart Buildings

Building owners and operators are slow to adopt smart technologies

- Some are simply not aware of them.
- Those who are aware of them may never have used them and may view them as too complex.
- Once they start using these technologies, they may be unprepared to manage the new equipment and software
- Most operators have little to no experience analyzing large amounts of building performance data

# Bumps in Smart Buildings contd

- Another barrier is the long replacement cycle for building infrastructure.
- Lack of funding is the leading barrier to greater investment in building improvements in the United States.
- Without incentives, many building owners will require more evidence that smart buildings are worth the high costs.
- Another barrier is the lack of seamless interoperability between connected devices.
- Building owners are increasingly concerned about cybersecurity.

## What is to be done?

- Most smart technologies programs also use cash incentives. By offsetting a portion of the building owner's initial investment in smart technologies, these standard incentives can increase project cost effectiveness and shorten the payback time.
- Incentives in the early market for emerging technologies could lead to further deployment and market transformation.

# What is to be done: Buildings US style

- Incentive programs aim for systems-level efficiency improvements and savings.
- Incentives are paid based on verified kWh saved. This model encourages building owners and energy service companies to work together to achieve deeper savings through an energy efficiency measures package customized to the individual building.

# What is to be done: Energy Market

- Remove commercial and regulatory barriers in the incumbent market. half-hourly settlement which will enable new business models to develop. could avoid investment in 850MW power generation.
- Set out a roadmap setting out the intended shape of our future energy system to provide certainty and stimulate investment.
- Undertake a whole systems review of charging structures

# What is to be done: More Generally

- Shift the focus away from consumer premise-based outcomes (i.e. reductions in usage or cost to consumers) to more general monitoring of the networks as a whole.
- Target innovation efforts at trials at scale with the aim of accelerating and commercialising new business models and technologies.
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# Trials

- **Support at scale trials to demonstrate new technology and business models**
  - To drive progress, innovation funding should look to target trials at scale, aimed at accelerating the commercialisation of new business models and technology.
  - focus on automated DSR, flexibility trading/optimisation platforms, storage and vehicle-2-grid demonstrations as important areas in need of support. Real life application of artificial intelligence in the energy system should also be explored.

# What is to be Done: Consumers

- Consumers will need to be empowered to manage their demand and adopt new technologies not only for their own personal benefit, but for the benefit of the system as a whole.
- Government should seek to incentivise those who can benefit, but not disadvantage those who can't.

## Attractive for Customers

- Adding smart functionality to appliances adds cost.
- essential that consumers have incentives to not only buy smart appliances, but to connect them and to use them in conjunction with energy and DSR schemes to use less at peak times.
- The Government needs, therefore, to create the market conditions where energy suppliers and smart appliance manufacturers are able to work together to create attractive propositions to customers.
- Develop an enhanced legal framework with industry for data privacy and protection
- Consumers need to be empowered to engage in flexibility. An enhanced legal framework for data privacy and protection, that builds consumer trust, can help us realise domestic flexibility.

# What is to be Done: Digital Technologies

- Incentivise investment into digital technologies
- eg improved energy monitoring/management systems; better data capture; virtual process testing; improved automation and synchronisation of processes; improved detection of machine wear and maintenance requirements
- Decarbonisation roadmaps for energy intensive industries need to reflect on the opportunity that digital technologies can have in supporting the transition to a low carbon economy.

# With help from .....

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