



the **hybrid home**
– tomorrow's home today



✖ consider this...

The next time you leave home and get into your car just think about all the energy efficiency tech you have in your car: an engine management system, on-board computer, stop-start functionality – you might even have a plug-in hybrid with battery storage. Now look back at your house and think what you have there... Chances are it will be very little: insulation, possibly solar panels and perhaps a

smart thermostat. None of it is integrated and most of it requires a lot of input from you to buy it, have it installed and then to make it work. And do you get any feedback on what it has done for you? Was the investment worth it or will it be the next owner that benefits most?

Does it have to be like this?

No, it doesn't.

✖ introducing the hybrid home

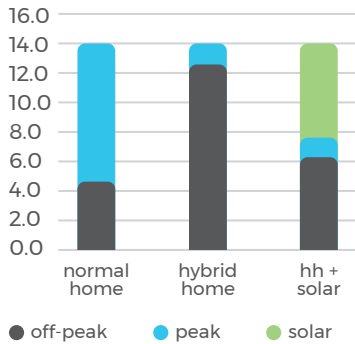
If we start with a new home, why shouldn't it be built like a hybrid car – integrated right from the start. The technology to do this is available, there are multiple benefits from doing so and what is more, there is a simple way to monetise these benefits so that it is immediately a positive financial proposition not a pay-back calculation.



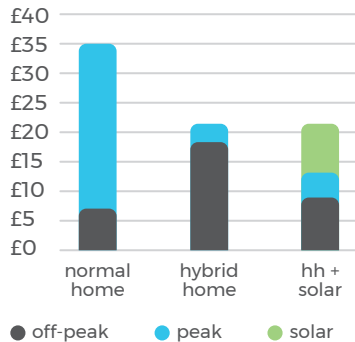
✕ working with business partners

Illustrative savings for average electricity usage with no efficiency components

daily consumption (kWh)



monthly electricity costs



At its simplest, a hybrid home has a large battery – large enough to store enough off-peak electricity to run the home at peak periods. From the data we hold, this is two-thirds of the consumption of an average home – something like 10KWh. As off-peak electricity is half the price of peak electricity this immediately delivers a saving of about 30 per cent. Add to this heat storage, solar panels and other forms of energy efficiency and you can easily get more than 50 per cent savings. What is more, it all runs in the background so, like a hybrid car, the user does not need to change their habits – although it helps!

geo's battery energy storage system

✕ costs

By starting with new homes several costs such as installation, procurement, sales and site electrical infrastructure costs (substations etc.) will be minimised. If incentives, similar to those that a hybrid car attracts, are provided then a Hybrid Home could be purchased for the same cost as an ordinary home – making it an appealing option for prospective homeowners. There are a number of possibilities for incentives, such as green mortgages, evolving the 'help to buy' scheme to help buy energy efficient homes, reducing Stamp Duty by two per cent for a Hybrid Home and looking at the next iteration of the ECO Supplier Obligation.

✕ the retrofit market

New build incentives could be extended to all house sales by allowing them to be claimed up to six months after purchase. By starting with the new build and refurbishment markets the whole proposition is 'professionalised' right from the start – buying, installing, running, maintaining, changing ownership etc. and this, together with the initial volumes, means that costs will fall. In parallel, it is expected that the explicit Demand Management Market will develop and users will be able to sell their demand management capacity to Aggregators. Thus, the whole market will grow.



✕ the benefits

One of the biggest attractions of the Hybrid Home is that the benefits it delivers are both significant and evenly spread across all stakeholders:



Consumer benefits

Affordable living:

- Reduced running costs – reduces electricity bill by one-third in all homes (average: £175 per year) – or two-thirds with microgeneration
- Affordable comfort – some savings may be taken as higher living standards
- Ability to also sell their Demand Response Capacity to Aggregators

Simple to understand, to operate, to buy and to sell:

- Technology does the work – no need for behaviour change (but it helps!)
- No complex agreements – bought on the mortgage
- Not locked into any one provider

Help to Buy (or equivalent) incentive:

- Reduces up-front cash requirement for a house purchase
- Could be adjusted to incentivise subsequent sale, enhancing the value of the home



Government benefits

CO2 reduction:

- Off-peak vs. peak energy mix
- Increased penetration of PV – reduced limitations
- Increased penetration of EVs over life of the estate

Addresses fuel poor agenda and affordability

Contributes to strengthening of the grid at minimal cost

Generates employment

Enhances Demand Management potential



Property Market benefits

Single solution to meet 'energy hierarchy' planning requirements

Infrastructure savings on local distribution network

Infrastructure savings on heating (no gas boiler/district heating requirement)

Increased penetration of solar generation possible

Future proof for Electric Vehicles

Enhanced sales proposition – reduced running costs, reduced Stamp Duty, enhanced living, enhanced green credentials – it is a customer proposition



Energy Industry benefits

Enhanced smart metering benefits through:

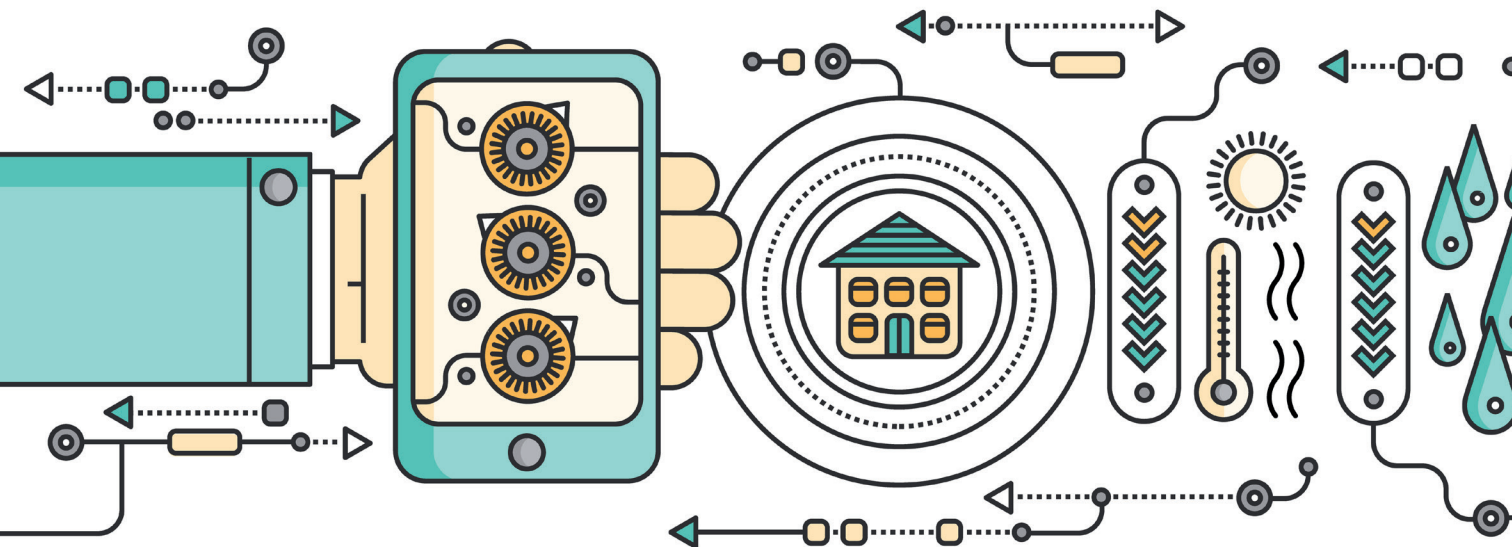
- use of dynamic time of use tariffs
- matching roll-out timescales – exploiting consumer interest opportunity

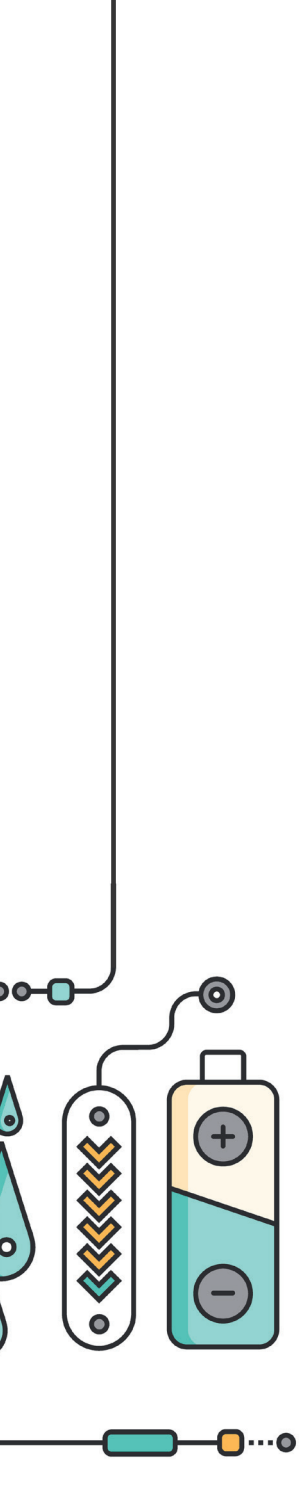
Greater opportunity for Energy Retailers as it removes the challenge of asset management of energy storage

Enhances opportunities for 'Virtual Power Plant' (VPP) operations as it reduces the cost of financing the assets

Addresses local network challenges at minimal cost

Contributes to network stability, also at minimal cost





✕ the case for early-stage incentives

It is this spread of benefits which makes the case for early stage incentives. Importantly these incentives could be made sustainable in the following ways:

- Focusing on house sales keeps incentive costs contained¹
- The mechanism for replacing incentives is clear through progressively reducing product costs and increasing monetisation of demand management services
- Some incentives such as Stamp Duty could be balanced by increasing Stamp Duty on non-Hybrid Homes, effectively increasing the level of incentive

✕ what's needed?

A cross-industry project is being established to generate a valid, substantiated proposal to be put to civil servants and political bodies.

Project team members are being recruited that will both fund and assist with the creation of such a submission.

Key features of the submission will include:

- A fully costed proposal for the required policy change
- Impact Assessment, considering costs and benefits for property market actors, energy utilities and for UK plc
- Relevant case studies from elsewhere
- A convincing narrative setting out the rationale, evidence base and approach

In addition, significant work to identify and collaborate with stakeholders will be undertaken.

¹ In 2015-16 there were 1,328,510 property sales across the UK (HMRC UK Property Transaction Statistics dated 21 Sep 2016). There were 56,140 new homes registered 2015 (NHBC New Home Statistics Annual Review 2015)

✖ need more info?

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