

Home Energy Management in Europe

Capturing Value from HEM

Delta Energy & Environment

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Home Energy Management in Europe: *Capturing Value from HEM*

Product developers, energy companies and telcos are beginning to deploy HEM products & services and to trial business models in an attempt to capture some of the value that HEM may offer – and to identify how much that value might be. Unlocking this value is one of the key challenges facing stakeholders active in the HEM space today, and it remains far from clear as to which models might succeed, and which value streams may be the most attractive.

Delta-ee is a leading European consultancy focusing solely on markets for low carbon energy technologies on the ‘customer side of the meter’, including microgeneration, heat pumps and cogeneration. HEM has a key role to play in this area and is a core focus for Delta-ee’s ongoing research (visit www.delta-ee.com for more information). In this White Paper we discuss:

- 1. The potential value streams from HEM*
- 2. What evidence is emerging as to the value being captured today*
- 3. Delta-ee’s views on where the greatest value of HEM may lie in the future and how the markets for HEM might evolve.*

Our main observations and conclusions are:

- ▶ **According to recent Delta-ee quantitative research, the most important sources of value to be derived from HEM deployment are likely to include the indirect benefits of customer retention & acquisition in the shorter-term, and residential smart demand benefits in the longer-term.**
- ▶ **Since residential heating & hot water demand exceeds electricity demand in many European countries, we see greater value associated with HEM systems that can enable effective heat demand management and reduction.**
- ▶ **Ultimately, the data that flows through HEM systems, and what this can tell the owners of that data about their customers, may be the source of greatest value.**

Where is the value?: there are multiple possible sources, and these will evolve greatly over time

Today, the prospect of improving customer loyalty and attracting new customers has resulted in energy utilities taking the lead in the roll out of HEM. This has been critical to the early market deployment of HEM. Policymakers and regulators have also encouraged deployment because of the perceived benefits there appears to be for sustained energy demand reduction.

But there are other potential benefits, notional and actual, and these will evolve over time. For example, residential demand response is also a much touted benefit for energy companies and customers alike – although not in the short-term.

In table 1 below, we summarise some of these benefits and to whom they might accrue.

TABLE 1. EXAMPLES OF POTENTIAL BENEFITS & VALUE STREAMS FOR VARIOUS HEM STAKEHOLDERS

Many value sources have been identified and are being trialled and tested, some are only just emerging or remain theoretical.

Energy supplier / utility	Residential customer	Policy maker / regulator	Telco / other
<ul style="list-style-type: none"> ▶ Customer retention & acquisition ▶ Demand response / load shifting ▶ Energy services deployment, eg microgen. ▶ HEM sales 	<ul style="list-style-type: none"> ▶ Electricity / heating cost savings ▶ Shared €€ benefits of demand response ▶ Comfort & convenience ▶ Social prestige 	<ul style="list-style-type: none"> ▶ Sustained energy demand reduction ▶ Carbon emissions reduction ▶ Fuel poverty alleviation 	<ul style="list-style-type: none"> ▶ HEM sales ▶ Data management and provision

Source: Delta Energy and Environment

Utility HEM deployment, most often in the form of simple in-home displays (IHDs), is most active in those markets with greatest customer switching between energy suppliers (eg the UK), but is also beginning to emerge in other markets where greater energy retail competition is expected in the future, eg the Netherlands, Germany and some of the Nordic countries.







The evidence so far: HEMs can catalyse customer retention and smart demand benefits

What concrete evidence is there so far as to the likely sources of sustained and long-term value? Frankly, not a great deal. Table 2 on the following page summarises a small handful of the approaches that stakeholders are taking to answer this question, focusing for example on:

- ▶ Residential customer retention & acquisition – a potential source of value today
- ▶ Demand response – a future source of value, but being explored today
- ▶ Revenue from HEM system and product sales
- ▶ Management and analysis of customer data.

TABLE 2. EXAMPLES OF PROGRAMMES AND TRIALS OF HEM DEPLOYMENT

Energy suppliers / utilities are leading most of the deployment of HEM in Europe, trying to capture value from customer retention & acquisition and anticipating demand response benefits in the future. A handful of developers are also selling direct to end users.

Stakeholder	Offering	How is HEM being deployed?	Where could the value lie?
	HEM product - RWE Smart Home	Germany. Partnering with a HEM developer and selling product direct to customers. A discount of up to €100 is offered to new gas/electricity customers that sign up to other RWE products.	Direct sale. Customer acquisition / retention.
	Unifi tariff	UK. Offering an IHD for free if a customer signs up to a particular tariff, involving lock-in.	Customer acquisition / retention.
	HEM and microgen deployment as part of E-flex trial	Denmark. Deploying Greenwave Reality devices for free (to 200 customers) as part of the E-flex trial, testing demand response.	Delivering demand response via the integration of EV charging, heat pump control, home energy management and ToU tariffs.
	HEM web portal	Minnesota, US. Providing customers with a web portal and home energy reports (from Opower) for free.	Customer retention - and energy savings of up to 3% per month. Meeting energy efficiency targets.
	HEM products	Established player, selling product via a large retailer, as well as strategy of deploying via utilities, including RWE.	Revenue from direct sales.
	HEM product	Deploying IHDs via utility partners (and selling directly to end users, although this is not the main route – a small number have been sold via this approach).	Product sales, data analysis and provision to utilities. Potential for demand response - customers have been reducing consumption in response to the 'grid watch' icon, with no incentive to do so.

Source: Delta Energy and Environment

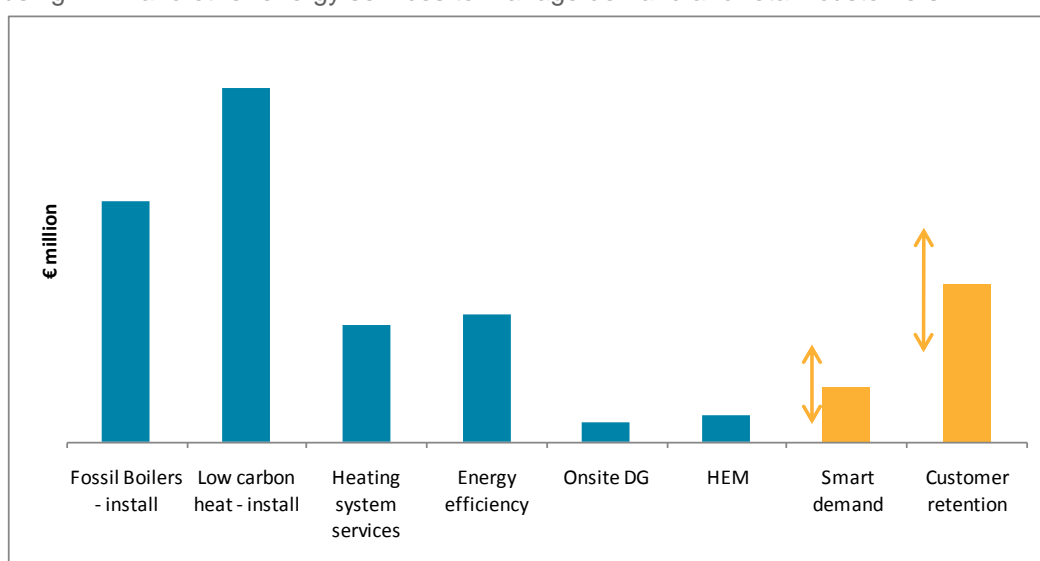
A key driver remains the holy grail of the stickier customer, but up to now we have seen very little concrete evidence of the impact that free HEM deployment by energy suppliers is having either on acquisition (although there is some clear anecdotal evidence from the UK that this can work) or retention (where a customer is not otherwise locked-in).

Delta-ee analysis: deploying HEM alongside energy services provision can deliver material value to energy suppliers

While the evidence today is patchy, we do believe that HEM can catalyse high value for energy suppliers through sticky customers and smart demand by 2020. Delta’s 2011 Study into the evaluation of the European energy services market opportunity to 2020¹ quantified the value that can be derived from HEM deployment directly (not much) and indirectly through these two benefits. Our research into utility energy services strategies highlighted that once HEM is in place, €200–300 million /year of gross profit margin can be enabled from customer retention and smart demand in both the UK and German markets. The figure below illustrates this.

FIGURE 1: SIGNIFICANT GROSS PROFIT CAN BE DRIVEN INDIRECTLY THROUGH HEM DEPLOYMENT

The value for energy suppliers can vary significantly between the different areas of the energy services market, as illustrated for one country that Delta-ee researched below. The blue bars indicate the direct sources of value from products and services. The orange bars indicate indirect value from using HEM and other energy services to manage demand and retain customers.



Source: Delta Energy & Environment, 2011

One conclusion from this is clear: that deployment of HEM alongside other energy services such as microgeneration or heating services has the scope to deliver significant further value.

Some pointers to the future: the emerging importance of heat and customer data

So the early indications are that long-term value can be derived from HEM deployment through customer retention and demand management – with the latter taking longer because we do not anticipate major electricity system balancing stresses in Europe in the short-term.

At this point, we need to mention the differentiation between electricity and heat. So far, the great majority of HEM deployment has been focussed on electricity consumption display. We now see an emerging trend that HEM and IHD companies are increasingly addressing heat demand, which makes good sense on the basis that in many European countries customers spend more money on

¹ Delta-ee Multi-client Study - Mass Market Energy Services: Strategies for Success to 2020. Delta Energy & Environment, 2011.

heat than they do on electricity - in Germany, 85% of residential energy demand is heating and hot water. If HEM systems can successfully help customers to reduce and keep down their heating bills, this could make them even stickier.

It is also possible that one of the major prizes from HEM deployment will be in the customer data that flows within and, through the home gateways, from homes to the other parties, whether HEM providers, the energy companies or the telecoms companies (telcos). HEM devices in homes today are already conveying large amounts of data, for example to energy supply companies that have deployed IHDs at scale. Our understanding is that in some of these programmes, data is either not being harvested in an organised way, or even if it is, it is not always being effectively analysed and interpreted.

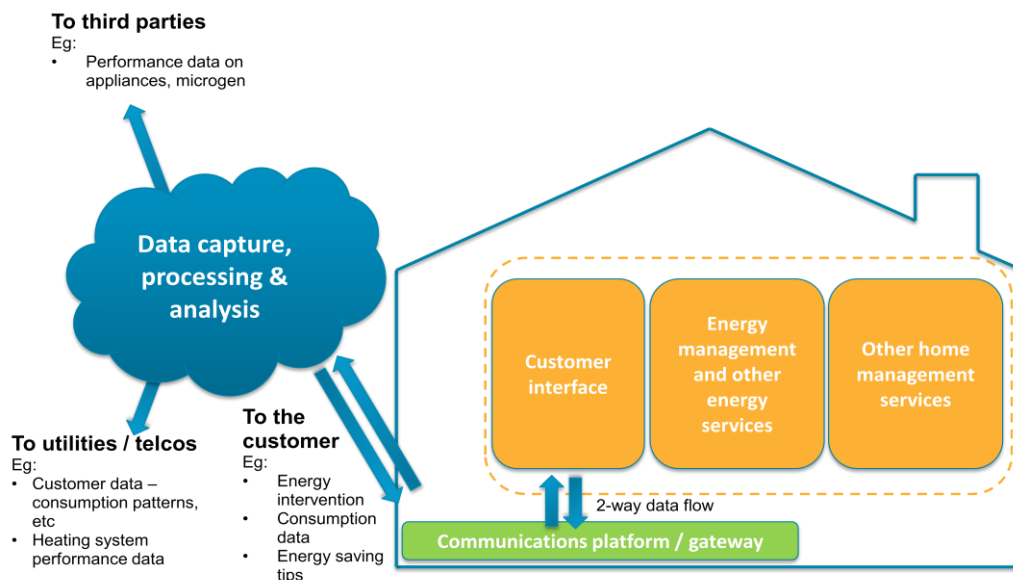
Two among many possible uses of this data include:

- ▶ Energy suppliers can use data from customers on ToU tariffs to identify which customer segments are most likely to react well to load shifting. Evidence from the US suggests that it often may only need a small proportion of customers to respond at a particular time to deliver the desired impacts.
- ▶ Information on poorly performing appliances in the home can enable utilities or appliance & microgen manufacturers to offer improved maintenance services to customers or to target customers with replacement product offerings.

We believe that data provision can be a key opportunity for creating value as illustrated in Figure 2 below.

FIGURE 2. THERE IS LIKELY TO BE MATERIAL VALUE IN CUSTOMER DATA CAPTURE, PROCESSING AND ANALYSIS

HEM devices can capture a vast amount of data which is valuable to several stakeholders – if effectively processed and analysed. The owners of this data are in a position to secure solid competitor advantage.



Some conclusions: there's more than one end point for HEM and the future commercial pathways remain far from clear

While many of the drivers are in place for HEM to be mainstreamed in some customer segments over the next decade – and while there is much hype about the future value opportunity for HEM - there is little clarity among the great majority of industry players, with whom we have dialogue, around how exactly the market will develop, and what the end points will look like.

Many conference presentations and other marketing material produced by HEM product developers, utilities and telcos illustrate an attractive 'all singing and dancing' smart home of the future – with a HEM system at the heart of it – indeed, not dissimilar from the illustration on the previous page. While our view is that this remains a viable scenario for some customer groups, there is some scepticism about this.

In Delta-ee's view, as with any other market analysis, it requires a deep understanding of market drivers and barriers to secure credible insight on how the HEM markets will evolve. Examples include:

- ▶ Deep understanding of customer behaviour and preferences. Customers are not homogeneous, far from it, and different groups will require a range of solutions tailored to their specific wants and needs. In any one country, there will be a variety of business models and customer solutions.
- ▶ Communications standardisation – the majority view in the industry is that communications standards are a confusing mess, and that until much of this is resolved, enabling fully open platforms, HEM market development will be held back.
- ▶ Policy and regulation – article 8 of the EU proposal for an Energy Efficiency Directive requires mandates on 'metering and informative billing' to be implemented at the national level. We do not expect this Directive to be agreed until late spring / summer 2012, with implementation to follow 12 months afterwards. We believe the negotiation of this Directive is 'one to watch' for all in the industry.

Overall, our main conclusions and observations are

- ▶ **According to recent Delta-ee research, the most important sources of value to be derived from HEM deployment are likely to include customer retention & acquisition, in the shorter-term, and residential demand response benefits, in the longer-term.**
- ▶ **Since residential heat & hot water demand exceeds electricity demand in many European countries, we see greater value associated with HEM systems that effectively enable heat demand management and reduction.**
- ▶ **Ultimately, the data that flows through HEM, and what this can tell the owners of that data about their customers, may be the source of greatest value.**

In Delta-ee's on-going research into the European HEM market, we are tracking the evolution of these factors and the impact that they will have on the developing HEM market. Insights on these factors, technology developments and trial activity will be the focus of our research in the coming months.

Delta-ee webinar – Who should be in control?

[Available for download now](#)

This 40 minute webinar explored one of the key battlefields in the HEM industry. Should the approach be to inform the customer and allow them to decide? Or is it better to have the intelligence in the kit, so the customer does not need to take action?

A recording of this webinar is available for a limited time. For further details, please contact Stephen Harkin, stephen.harkin@delta-ee.com, +44 131 625 1005.

Delta-ee webinar – Capturing the value of HEM

[Available for download now](#)

In this 40 minute webinar we review the latest product and technology trends and explore the emerging value streams for the various stakeholders in this embryonic market. We also offer a view as to how the value opportunities may evolve in the next decade.

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Delta-ee Multi Client Study on HEMs and European market development

2012

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