

## Refinancing smart metering by process efficiency and product innovation

### **Smart: How metering will pay-off**

**Smart metering is a major topic in Germany: From the first of January 2010 there is a legal obligation to install Smart Meters in new and renovated buildings. Next to this obligation every consumer should be able to obtain Power Depending and Demand Response tariffs before the end of 2010. Especially public owned utilities, like the German "Stadtwerken" and other small and medium sized utilities have strong reservations. For instance on questions like "How much is the financial investment and in which way can they be paid-off?"**

**EVB Energy Solutions has initiated three research projects on this subject and they all come to the conclusion that the financial potentials are in more efficient processes and innovative products!**

The first report called: "Herausforderung aus Markt und Regulierung – Handlungsoptionen für durchgängige Prozesse", in English; "Opportunities in a liberated Market and Regulation – a need for seamless processes", describes the long-term development of the Smart Meter market and shows that utilities are obliged, if they will survive, to develop their own unique strategy concerning Smart Meters. In future a sustainable, reliable and economically feasible electricity supply can only be possible when energy demand and volatile energy generation are in balance. Smart Metering will be the core-element to achieve this balance due to its possibilities to delay energy demand and its capability to support the increase of energy efficiency.

The second report; "Smart Metering – Erfolgreich sein durch Prozesseffizienz und Produktinnovation", in English; "Smart metering – being successful by implementing process efficiency and product innovation" as well as the third research report; „Umsetzbare Smart Metering-Produkte – Eine Handreichung für Vertriebe", in English; "Smart Metering products in practical use – A user guide for the sales force", demonstrate how Smart Metering can be exploit in practical and economical feasible ways. They show the usage of already available intelligent metering products and systems ready for the implementation in the first phase of the Smart Meter market rollout in Germany. Both reports strongly underline the conclusion that Smart Metering technology is just part of the total solution.



### Cost covering? The sales force objective!

It is mainly the sales force that has to generate the coverage of this cost. As shown in the EVB research, the average annual operational cost for meter-management and meter-reading is 43 Euro per electronic meter. The generated turnover although can be around 54 Euro per meter / annum. This can only be achieved under the condition that the utility decided for a total Smart Meter rollout in its distribution network with at least 10.000 Smart Meters in operation. In general, specific operational cost of Smart Meters will rise significantly due to fewer meters or to a lower Smart Meter density in the network, according to the research report.

### Efficient processes: Result of economic Smart Metering

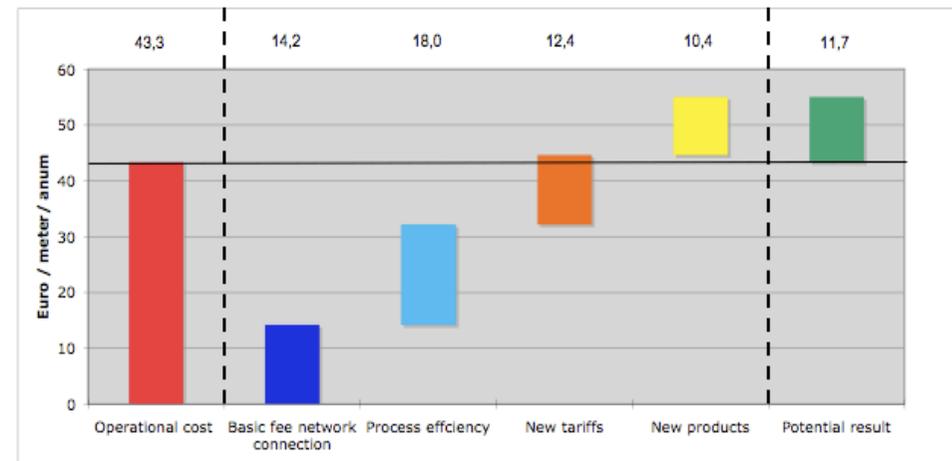
In future it will be impossible, to execute simple procedures like; supplier change, customers changing dwellings, tariff changes, in an economic acceptable way with today's meters. Just an example: Today one supplier-change costs the "old" supplier between 150 and 200 Euro. No energy supplier can financially support these changes, when consumers massively will start the move to other suppliers, as it is predicted in the outlook of the liberated energy market. This one and many other processes, who need contribution of almost all departments of the energy supplying company or network operating company, urge for automatic processes, without any manual intervention and without disturbing the other ones. The report proves that Smart Metering is THE economically feasible option, because it simply increases process efficiency.

### Meter reading: The biggest potential in cost reduction

What are the concrete potentials in cost reduction in these efficient processes? In the second report an estimation of cost saving has been made, based on data made available by the German regulator (Bundesnetzagentur) and based on the average operational cost. In table 1 the processes are listed with their bandwidth in cost saving potential. Number one in the ranking is the meter-reading process, here the utility can achieve a cost saving between 1,20 Euro and 12 Euro per annum and meter. Number two is transport management, followed by off-switching and monitoring vacancy of dwellings. Managing these processes automatically will generate savings up to 75%.

### To determine and maintain utility's potentials

For the determination of individual cost saving potentials the report proposes utilities, depending on the level of available data and capacity, to analyse their operational cost and their current processes either by following an interactive process cost calculation or by analysing substantial budget-lines in relevant processes. In practice hardly any utility uses process cost calculation, therefore the report concentrates on those processes that will have significant cost saving potentials. See



Comparison average operational cost in meter-management and meter-reading, based on average potential coverage in an operation with around 10.000 Smart Meters. Mainly the new tariffs and products contribute to the positive result.

[Source: LBD research based on public available data and estimations per 07/2009]

table 1. As an alternative the current process cost can be calculated by adding the budget-lines “Personnel”, “IT” and “Miscellaneous operational cost”. For a realistic cost-benefit assessment when Smart Metering has been implemented all cost saving potentials need to be analysed, independently from the argumentation the utility used to arrive to this decision.

### The Market needs new products

Despite the substantial cost savings in process efficiency the implementation of Smart Metering with only new products and innovative tariffs will have serious consequences on the asset part of the balance. If a utility will be successful in the Market with Smart Metering it is obliged to generate a unique selling point and additional turnover. The report clearly shows that web-portals showing history of consumers energy consumption and their invoices in a higher frequency, as requested by the law, will not help to increase turnover significantly. From a consumer perspective they are taken as commodity and therefore they will hardly contribute in turnover. The consumer requests simple predictable products with real added value for him.

### Keystone: How well do I know my customers?

Before new products can be developed, the company should investigate in-depth the need and expectations of their customers in relation with their utility. Market research is therefore key activity to start with. Determination of customer values is essential for success. Market research will have to work-out different consumer profiles with their particular specifications, needs and priorities. Only the utilities who know their customers well can develop and offer products they are willing to pay for and in this way contribute to raise turnover. Apart from raising awareness for these added value products it is important to raise in parallel the acceptance of Smart Meter as a vehicle for implementing these products in their homes. Smart Metering is and will be a tough subject to explain its benefits to the consumer.

### Only few customer target groups have the required potential

The reports determine the following customer target groups;

- “Young & Single”,
- “Double Income, no Kids” (Dinkies),
- “Modern Lifestyle Families”,
- “Receptive Empty Nesters”
- “Sustainability Minded”.

Process	Annual saving potential per meter	
	Min.	Max.
Meter reading	1,2 €	12,0 €
Check data probability	- €	3,0 €
Invoice corrections	0,1 €	0,5 €
Off-switching	1,0 €	3,0 €
Collection	0,5 €	1,0 €
Transport management, reduction transport losses	2,0 €	6,0 €
Invoice adaptation conform GPKE/GeLi	- €	0,2 €
Vacancy monitoring	1,5 €	3,0 €
Meter testing	- €	0,1 €
<b>Total</b>	<b>6,3 €</b>	<b>28,8 €</b>

Table 1: Quantitative estimation saving potentials in process cost after a total Smart Meter rollout, discovered large bandwidths and therefore considerable potentials in process optimisation.  
[Source: LBD research per 07/2009]

The smallest target group mentioned here are the “Dinkies”, with a share 1 or 2 % of the total German population. The second-biggest target group, with a share of 5 to 7% are the “Modern Lifestyle Families”, followed by the “Receptive Empty Nesters” with 4%. The biggest target group, with a share of 8 to 10% of the German population are the “Sustainability Minded” people.

A small part of the representatives from the main target groups will actively address their utility to get informed about their Smart Metering offer. People of this rather small pro-active group you also will meet on other subjects if they have the feeling that they can influence the decision-making process or when they like to contribute in the first steps of the concrete realisation. The majority of the customers in these target groups however need to be actively informed about the new applications and products.

**Customer added value predetermines product innovation** The first step in product development will be the exploitation of the technical Smart Meter possibilities by creating a matrix with all possible functional elements. This matrix can be used, to develop new suitable tariffs and products. These tariff and product elements will be linked with the expectations of the different target groups, see table 2. All these elements can be combined in such a way, like elements of a construction box, to new tariff and product specifications matching the expectation of one of the specified target groups.

#### **Each target group will need its own product offer**

The third report shows concrete products, already available or available in the next 20 months. A utility could offer to all its customers, interested in Smart Metering, a simple starter kit, containing an electronic meter with remote reading and a dual, clock-time depending, tariff as option. The information about the energy consumption will be visualised in an online web portal together with dedicated energy saving hints. The report concluded that such a basic product would cost the supplier 25 Euro per annum per customer. A 20 Euro additional service fee and a higher base fee or a slightly higher consumption tariff can cover this cost. Another product example mentioned in the report, the correct offer for “Modern Lifestyle Families”, is a Smart Meter with remote display and appliance-start detection.

This offer should include dual tariffs with clock-time windows with a possibility to upgrade the amount of tariff and time windows, a bonus model to support energy saving initiatives should also be included. The consumer will be informed about his energy consumption via the supplier’s web-portal; visualisation of his energy consumption,

Consumer expectations Smart metering	Possible tariff & product elements
<ul style="list-style-type: none"> <li>- Feedback energy consumption</li> <li>- No financial surprises</li> <li>- Saving energy cost</li> <li>- Environment</li> <li>- Education how to use energy more efficient</li> <li>- Energy efficiency</li> <li>- Expression modern Lifestyle</li> <li>- All energy supply from one utility</li> <li>- Comfort</li> <li>- Security</li> </ul>	<ul style="list-style-type: none"> <li>- Visualisation energy consumption</li> <li>- Interactive information about energy consumption</li> <li>- Analysis consumption</li> <li>- Consultancy Energy efficiency</li> <li>- Invoices over a smaller time span</li> <li>- Pre-paid tariffs</li> <li>- Consumer interaction regarding time-window depending tariffs</li> <li>- Consumer interaction regarding bonus models</li> <li>- Boundaries energy consumption</li> <li>- Automatic delay consumption</li> <li>- Integration local energy production</li> <li>- Integration local energy storage</li> <li>- Contracting</li> <li>- Services beyond energy supply</li> </ul>

Table 2: The target groups and their expectations regarding Smart Metering, overview possible tariff and product elements.  
[Source: LBD research per 07/2009]

explanation of his key-data, evaluation of energy intensive appliances and his Carbon Footprint. For this target group an interesting optional service offer is “multi-supplier” monitoring; reading, visualising, advising and invoicing all types of energy sources and water.

The report estimates that for such a product the customer is willing to pay a fee between 30 and 50 Euro per annum apart from the initial payment. The cost of this offer, estimated at 35 Euro per annum per user, can be covered by a 30 Euro annual service, a slightly higher basic fee or consumption tariff combined with an initial payment for 50 Euro. Additional income generated by other services offered by the supplier and also handled by the same web-portal compete the coverage of this “multi-supplier” monitoring.

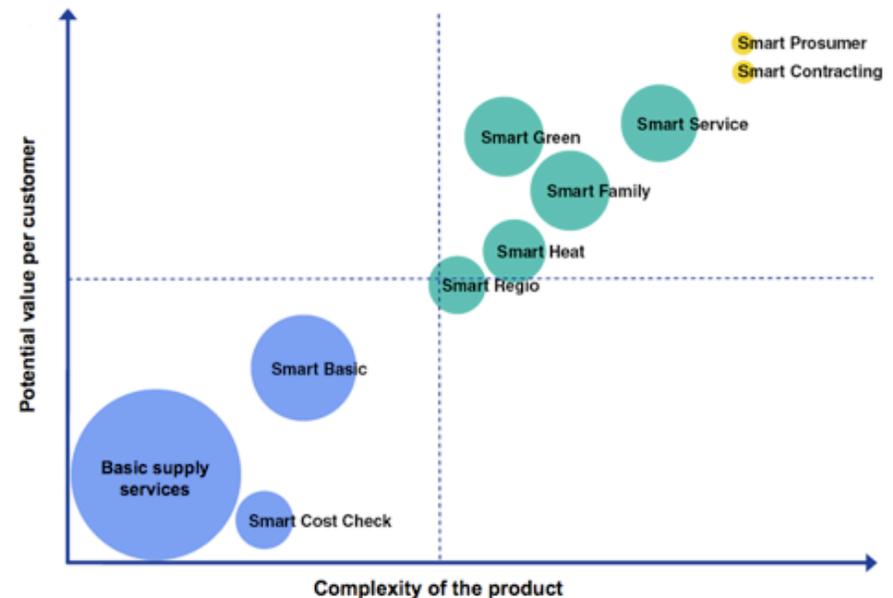
### Dynamic tariffs enable a profitable business

Thanks to Smart Metering the utility can also develop, parallel to time- and power-depending tariffs, so-called dynamic tariffs. The following elements as, managing the energy consumption in time and load, power limitation as well as automatic consumption delays are part of these dynamic tariff structures. To make money with dynamic tariffs the utility should abandon the today's standard load profiles is the conclusion of the report. This means in the transition phase a complex and more costly activity but on the middle-long terms the new dynamic tariff portfolio will be more profitable. Today the utility can reach a benefit between 7 to 14 Euro annually and customer. Higher price variation in the dynamic tariff structure in combination with Home-Automation-Systems will generate even higher financial margins in future.

### Home automation offers potential for growth

For the utilities the highest potentials to earn money with Smart Metering products are, apart from the dynamic tariffs, Home automation services and Smart Grid applications. The keyword here is Multi-Utility. In near future the report foresees more demand for products and services for the following applications:

- Heating
- Solarsystems; thermal and photovoltaic
- Alarmsystems; fire, intrusion, technical
- Homemanagement
- Communication and Infotainment
- Energy-generation and storage



Potential value of Smart Metering products, graph shows the relationship between the complexity of a product and its achievable value potential. Very complex products may suite small but interesting target groups. Due to the high value potential it may be profitable.

(The figure is a schematic presentation:

The size of the circles corresponds with the size of the interested target group.)

[Source: LBD research per 02/2010]



Another profitable business, partnership agreements with appliance-manufacturers in the development and sales of new products, will fit in the approach; maintaining lifestyle with less conventional energy consumption. Conservative calculations show that such partnerships may generate an additional turnover of around 10 Euro annually per customer. Especially community owned utilities should investigate how to make available their knowledge in the different business fields for a product development partnership and how they can combine this knowledge with their own added value offers in Smart Metering respectively Home-automation products. This “total approach” is a very promising business proposition for them, due to their unique position in most communities. These utilities have long-term cooperation relationships with social housing companies and local house-owner associations and above all they supply already all energy sources including water and heat in their area.

EVb Energy Solutions has initiated the research and production of these 3 “Smart Metering” reports executed by the Beratungsgesellschaft LBD, Berlin. These 3 reports, in German language, with more detailed information can be ordered via [Sina Luckhardt](mailto:s.luckhardt@evb.net) (s.luckhardt@evb.net) EVb Energy Solution for 600 Euro each.