

Advanced metering for SMEs

Carbon and cost savings



Executive Summary

The Carbon Trust would like to thank everyone who has contributed to this report, either through direct involvement in the trial, general discussions or review of findings and implications.

Executive summary

Widespread use of advanced metering by SMEs can provide cost-effective carbon savings for the UK and significant energy savings for customers. The Carbon Trust's field trial has demonstrated the potential benefits, identified key barriers and clarified the action required by the SME community, Government and energy suppliers to accelerate the market.

Advanced metering can enable businesses to identify energy, cost and carbon savings by providing detailed information about the way in which they use their energy. Although this technology is fairly well established in companies with significant energy demands, it is not widely used by small to medium-sized enterprises (SMEs).

There are over 2.7 million manually-read energy meters in UK SMEs, all of which could be replaced by advanced meters. The energy consumption through these meters is estimated to cost £6.5 billion per year and lead to emissions of over 50 MtCO₂ per year.

From 2004 to 2006 the Carbon Trust carried out the first UK field trial of advanced metering for SME users. The trial aimed to demonstrate the potential benefits of the technology and to understand the case for encouraging widespread adoption of advanced metering by SMEs. A total of 582 advanced meters were installed in SMEs across the UK and metering services were provided to these sites by seven different consortia.

SMEs using advanced metering can identify an average of 12% carbon savings and implement an average of 5% carbon savings.

The study has demonstrated that SMEs using advanced metering can identify an average of 12% carbon savings and implement an average of 5% carbon savings through reduced utility consumption, as shown in Figure 1. The SMEs involved in the trial achieved average annual savings of over £1,000 and 8.5 tCO₂ per site.

Figure 1 Average % carbon savings in SMEs using advanced metering

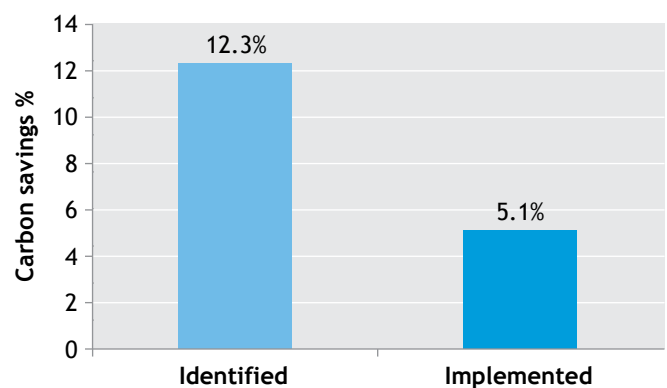
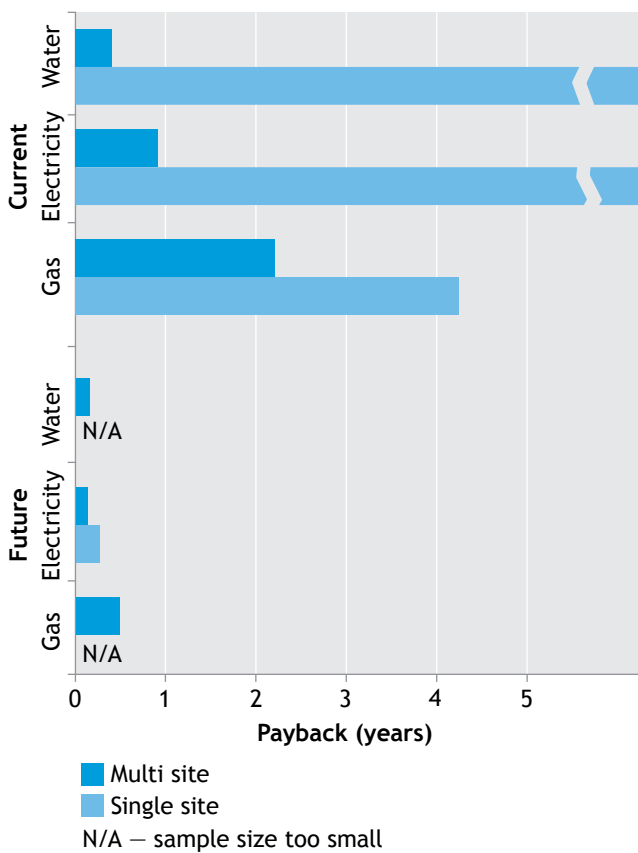


Figure 2 shows the paybacks modelled for single and multi-site companies. Based on current meter and service costs, there is already a very strong business case for using advanced metering at multi-site SMEs, such as retail and wholesale chains, and for energy-intensive SME sectors, such as manufacturing. For single-site SMEs with lower energy consumption, the business case is less attractive with paybacks over five years in most cases. However, modelling has also been carried out using predicted costs and this has indicated that in future a clear business case will also exist for single-site SMEs with lower consumption levels, as the costs of metering services will be driven down by increased innovation, automation and economies of scale.

Figure 2 Advanced meter payback periods for SME sites based on current and future costs



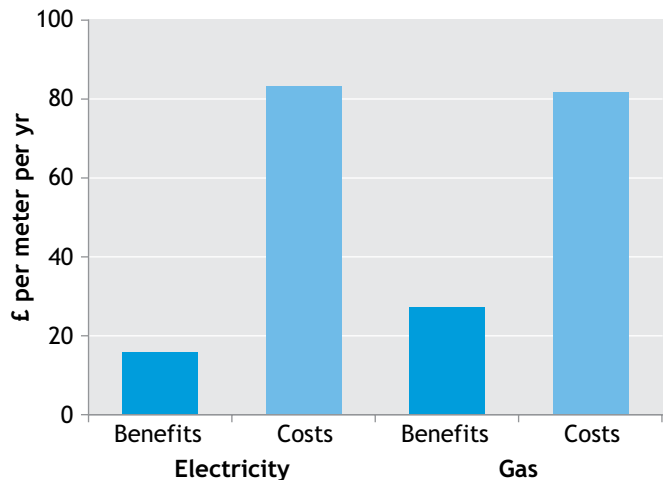
There is already a very strong business case for using advanced metering at multi-site SMEs and for energy-intensive SME sectors.

A variety of different metering services were included in the trial, ranging from basic data provision to detailed advice via phone calls and site visits. The highest energy savings were achieved by providing consumption profiles and energy saving recommendations via email. This is a significant finding which suggests that low-cost metering services could be provided using automated systems in future.

Although some SMEs were initially sceptical about the potential benefits of advanced metering, there was a widespread recognition of these once the services had been used. Of the many customers that were offered the chance to continue their metering service on a full commercial basis, over 80% opted to continue at the end of the trial.

From the perspective of energy suppliers, there is likely to be a good business case for providing metering services to certain sections of the SME community which have large consumption or concentrated sites. However, as Figure 3 illustrates, the current costs of providing advanced metering services to all SME users significantly outweigh the potential benefits. Furthermore, even as costs of technology continue to come down in future the business case for energy suppliers appears to remain marginal overall.

Figure 3 Supplier costs and benefits for widespread roll-out of advanced gas and electricity metering to the SME community, using current costs

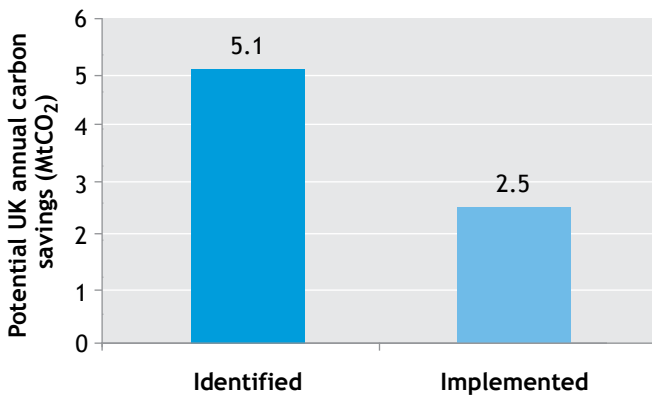


The trial findings highlight a significant barrier to the wider uptake of advanced metering due to the insufficient financial incentives for energy suppliers.

Energy suppliers can benefit by altering their business models to realise new opportunities, such as sales of higher-margin metering services. They may also benefit from enhanced customer acquisition and retention. However, the trial findings clearly highlight a significant barrier to the wider uptake of advanced metering due to the insufficient financial incentives for energy suppliers to provide these services on a widespread basis. Given this context, if the SME advanced metering market is left to grow organically it is likely to develop in a fragmented way, with slow growth and limited economies of scale being achieved.

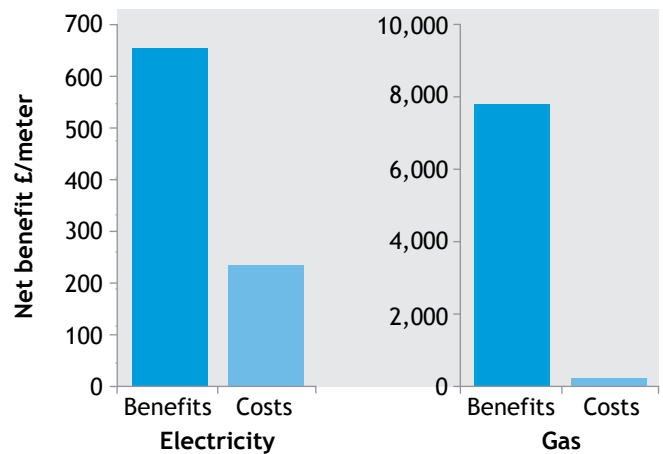
From the overall UK perspective, widespread adoption of advanced metering in the SME community represents a significant opportunity for achieving cost-effective carbon savings. Figure 4, which shows the results of the field trial scaled up to the UK level, illustrates that a total of 5.1 MtCO₂ savings could be identified and 2.5 MtCO₂ savings could be implemented per year. This level of identified savings is equivalent to over 2% of all carbon emissions from UK businesses. Scaling up the results in financial terms indicates that total cost savings of £650 million could be identified and £300 million implemented per year across the SME community.

Figure 4 Field trial carbon savings scaled up to UK level



Furthermore, a very significant proportion of these carbon savings can be achieved with a net financial benefit to the UK. Figure 5 shows that at current costs, there would be a net UK financial benefit from rolling out advanced metering to all but the lowest use groups of SME users¹. Under expected future costs there would be a net UK benefit for rolling out advanced metering to all business users.

Figure 5 Net UK costs and benefits for advanced metering roll-out to all but the lowest consuming SMEs¹



In the future annual savings of 5.1 MtCO₂ could be identified and 2.5 MtCO₂ implemented at no net cost to the UK.

¹ Lowest consuming groups refers to electricity customers in profile classes 3 and 4 and gas customers with annual demand of less than 732 MWh.

In light of the significant cost savings available to SMEs and carbon savings achievable at net financial benefit to the UK, it is essential that the market for advanced metering in SMEs grows as rapidly as possible. Given the lack of incentive for energy suppliers to provide advanced metering services across the entire commercial sector, there is a very strong case for a mandated roll-out of advanced meters for SMEs.

There are various policy options which could be used to achieve a mandated roll-out. The most basic policy measure would be to ensure that advanced meters are installed for all new and replacement meters.

Beyond this the Government could mandate an accelerated roll-out to increase the rate at which existing meter stock is replaced. An accelerated roll-out is likely to be most effective if targeted initially at all high-consumption SME users, where the business case is currently most attractive, and then extended to the wider SME community. Using a 20% accelerated roll-out rate, targeted initially at the highest consumption users, could lead to savings of 1.5 MtCO₂ per year by 2012 and 2.5 MtCO₂ per year by 2016.

Without a mandated roll-out, widespread uptake of advanced metering by SMEs is highly unlikely and a significant cost-effective carbon saving opportunity will be missed.

Further supporting measures will also be required to ensure that the market grows in a coordinated manner. For example, it is vital that industry-wide standards regarding meter functionality and interoperability are adopted. This work is underway, led by OFGEM, but must be prioritised to ensure that agreement is reached at the earliest possible opportunity. Further measures are also required to ensure that the data from advanced meters is made freely available to the relevant parties and that standards are agreed relating to the frequency and format of data transfer.

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For energy suppliers, roll-out will stimulate the market for innovative new metering services and generate increased customer awareness of the benefits of using such services. Widespread uptake of advanced metering would also help catalyse an associated energy services market, particularly for smaller service providers. It would also put in place an infrastructure of meters capable of supporting further policies to reduce carbon emissions in future.

The following is a summary of the key recommendations coming from the trial:

- ▶ Trade bodies, the Carbon Trust and others should continue to promote the benefits of proactive use of advanced meters to the SME community
- ▶ Based on the new evidence from this study the Government should take action to ensure a widespread roll-out of advanced metering technology to SME users
- ▶ Government should work to ensure that appropriate standards are put in place regarding advanced meter functionality, data availability and data transfer procedures
- ▶ Energy suppliers and metering service providers should investigate new business models to provide innovative metering services to their SME clients.

The benefits of advanced metering are clear in terms of cost savings for SMEs and carbon savings for the UK. Action is now required to stimulate the market and ensure a widespread roll-out of this important technology.

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The Carbon Trust is a UK-wide company, with headquarters in London, and bases in Northern Ireland, Scotland, Wales, and the English regions.

The Carbon Trust is a private company set up by government in response to the threat of climate change, to accelerate the move to a low carbon economy.

The Carbon Trust works with UK business and the public sector to create practical business-focused solutions through its external work in five complementary areas: Insights, Solutions, Innovations, Enterprises and Investments. Together these help to explain, deliver, develop, create and finance low carbon enterprise.

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