Department for
Business, Energy
& Industrial Strategy

Non-Domestic Smart Energy Management Innovation Competition

Evaluation case study: AEMS

Acknowledgements

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Contents

Executive summary

This report describes findings and lessons from the evaluation of the pilot of Alert Energy Management Solution (AEMS), an energy management tool piloted by AND Technology Research (AND TR) as part of the UK Government's Non-Domestic Smart Energy Management Innovation Competition (NDSEMIC). AEMS consists of an online dashboard and mobile app designed to help businesses monitor their energy use and understand where changes could be made. It was piloted amongst 66 businesses ranging from independent microbusinesses to a chain store.

The evaluation has found that, where users actively engaged with AEMS and felt that it gave them additional insights into their energy consumption, AEMS greatly increased users' understanding of their energy use, supported changes in energy use behaviour, increased discussion of energy within the organisation, and led, in a couple of cases, to energy savings being made. Overall, the evaluation has a medium level of confidence that AEMS has contributed to energy savings in at least some sites.[1]

Users most benefitted from the tool where it provided them with new information in an easily accessible format. The fact that, for several businesses, AND TR was providing the analysis with very little input required from the business was considered attractive. At least one business found that AEMS partly reduced their own management burden (as it meant they did not have to track the energy use of their multiple pieces of equipment).

The findings from this report suggest AND TR could take forward the following points as it progresses its commercial offer, which may also be relevant for other innovators:

- The initial and ongoing support offered by AEMS to 'talk through' the business's energy use, offering tailored suggestions for change, appears to have been critical to the business saving energy in several cases. This suggests that, if commercially viable, AEMS should consider ways to integrate such support (or similar) into its offering.

- At least one small business with some prior interest in energy management recognised how AEMS could help businesses like them once they had taken more time to analyse the data. These organisations may not require the same level of support as less energy-focused organisations. However, personalised support may still be necessary to demonstrate the benefits of AEMS to these users and to prompt initial engagement.

- Some users strongly advocated for the inclusion of live data,[2] so they could monitor how energy use changes as specific equipment is switched on / off, or to understand spikes as they happen, rather than a day later. AND TR may consider implementing this.

- Similarly, some users who did not have access to it were interested in equipment-level monitoring. One user who did have access to equipment-level monitoring planned to

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[1] This is the conclusion reached from applying the evaluation's strength of evidence framework (see Chapter three). This framework triangulated various quantitative and qualitative data sources to give a level of confidence that savings had been achieved in some pilot sites.
[2] Live data in the context of this Competition describes energy consumption data at half hourly (or more detailed) granularity fed to the tool or platform on an on-going basis. Non-live data may provide the same level of granularity but is not updated on an ongoing basis, for example being uploaded to the tool or platform once a day (and in arrears).

use the insights to drive a wider energy saving project across the company. Equipment-level monitoring may therefore meet the needs of those suggesting live data as useful.

- The energy insights were not widely used as they did not provide further detail about what could be driving changes in consumption, or advice on how to reduce energy use: for this element of the tool to be more beneficial, consideration should be given to tailoring the insights to the specific equipment and energy use profile of that business.

- The tool had not helped users to set and adhere to energy budgets, as the budgets were not considered relevant. Further consideration may be needed as to how to help businesses set appropriate budgets. This could include allowing more time from starting to use the tool for the business to establish their typical usage and advising on a realistic percentage reduction in consumption depending on existing levels of energy efficiency.

- AEMS in its current form may be most useful to smaller organisations with limited capacity for monitoring energy use through other means; if AND TR intends to recruit larger chains, further research and development may be necessary to enhance the AEMS offer against that of competitors.

1 Introduction

This report describes the findings and lessons from the evaluation of 'Alert Energy Management Solution' (AEMS), an energy management product developed by AND Technology Research (AND TR) as part of the UK Government's Non-Domestic Smart Energy Management Innovation Competition (NDSEMIC). NDSEMIC (from here on referred to as 'the Competition') is an £8.8 million programme, funded by the Department for Business, Energy and Industrial Strategy (BEIS).

The Competition aims to maximise the potential for energy saving in three priority sectors (hospitality, retail and schools). To do this, it has developed energy management products and services that use smart meter data to help smaller organisations to manage their energy consumption better.

Nine projects were selected as part of the Competition to receive initial development funding. Seven of these passed through to the next 'feasibility and initial testing' stage. All seven project developers, including AND TR, also went through to the final stage of the Competition (from February 2019 to January 2020) during which the innovations were piloted with small businesses and schools in a real-world setting.

This report is part of a package of reports published as products of the Competition, which also includes six other pilot evaluations, an overall final evaluation report, insights for innovators, user impact case studies and an evaluation technical report. These are available on www.gov.uk.

Overview of AEMS

AEMS is a tool (available via online dashboard or mobile app) that uses live and non-live energy data to help small businesses monitor and understand their energy usage, so that they can become more energy efficient in their operations. Figure 1, overleaf, presents a screenshot of the tool.

Figure 1: Screenshot of the AEMS dashboard
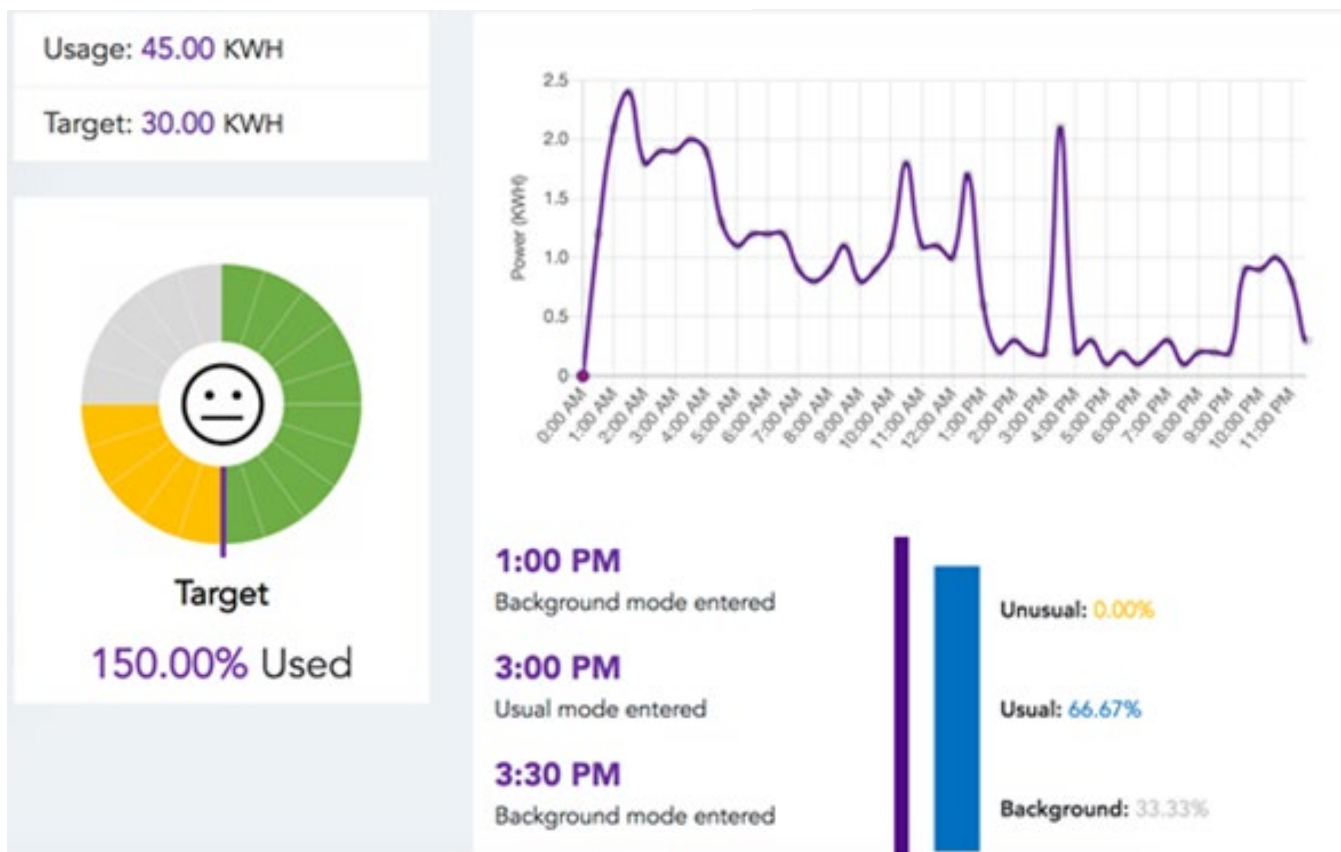
The objectives of AEMS are to help business owners:

- Gain an understanding of where and how energy is used in their business activities and operations.

- Obtain oversight over what 'normal' operations look like, receiving alerts where energy use does not reflect this, leading to greater 'peace of mind'.[3]

- Increase their business's energy efficiency by identifying potential areas for operational and behavioural change.

- Uncover opportunities to reduce carbon emissions and set carbon reduction strategies.

- Demonstrate to their customers that they are committed to reducing energy use.

The anticipated effects of AEMS (its theory of change)

Figure 2 (overleaf) presents the theory of change underpinning AEMS' design.[4] It describes: the activities that AND TR conducted to develop AEMS, the direct outputs of these activities, and anticipated short-term and long-term results ('outcomes'). By the end of the project's close

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[3] These alerts were available to all users, regardless of whether they received live or non-live data feeds.

[4] A theory of change describes how change is assumed to come about through an intervention. It often shows in a diagram the connections between interventions and outcomes – these are often called 'causal pathways' or results chains.

in January 2020, the project was expected to have met, or be contributing to, all of its proposed short-term outcomes, as well as showing evidence towards meeting some of the longer-term outcomes.

Figure 2: Logic model showing AEMS' theory of change
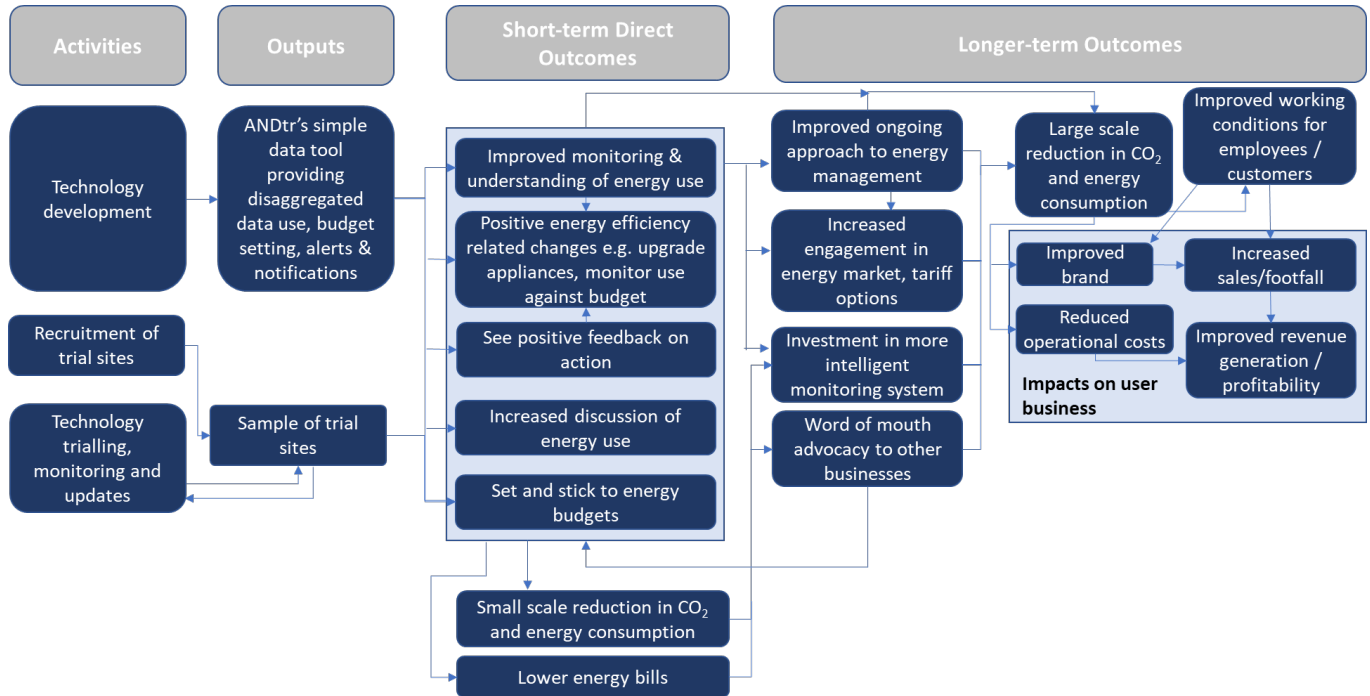
Key features of AEMS

AEMS presented small businesses with energy and budget data in a simple, visually accessible format, in both an online dashboard and a monthly tailored report. It allowed businesses to create energy profiles that reflect their normal daily energy usage in the business. Once the usual level of energy consumption was established, AEMS would then issue alerts when consumption changed unexpectedly. This feature was available to all users, both those with live and non-live data feeds. The tool was available online and via a mobile app, with the latter having slightly different features, as further detailed below.

The AEMS **dashboard** displayed:

- **Live or non-live half hourly energy usage** charts – allowing users to track business-as-usual usage and observe any short term 'spikes' in usage (by time and magnitude of spike).

- The most recent day's energy use as a percentage of **a daily target** set by the user.

- A further **breakdown of daily usage** into 'usual', 'unusual' and 'background' (i.e. outside of business hours).

- **Graphs of historical data** to help understand whether daily, monthly or yearly targets have been met.

- **Insights** and **tips** based on energy usage patterns.

- **Pushed alerts** (to mobile app users only) when the daily target had been exceeded / energy use was unusual (which may indicate machinery is faulty), see Figure 3.

In addition to the online dashboard and app, users could also receive a monthly **tailored report** of their energy data, which included: a graph of each day's energy use over the last month; a comparison of the total consumption with the previous month's consumption; usage in an average day compared with the target; and the average daily breakdown of 'usual', 'unusual' and 'background' use.

Figure 3: Screenshot of an AEMS alert

You've used less energy!

Well done! On Sunday 12 January you had used 14.58 % less energy than that time the previous week. Try to keep up the good work.

This evaluation

The research for this evaluation was conducted by Ipsos MORI in partnership with the Carbon Trust and Technopolis Group. Ipsos MORI designed the evaluation approach and designed and delivered all aspects of the methodology. The Carbon Trust designed and completed the energy consumption analysis which was then quality assured by Technopolis Group.

The evaluation takes a theory and case-based approach which is described in more detail in Annex 1. The findings draw on insights from six on-site visits to businesses piloting AEMS, at which the main AEMS user was interviewed. Additionally, two telephone interviews with pilot participants who had not fully used the tool were conducted (to understand why). This evaluation also utilised insights and data provided by AND TR throughout the Competition, including user interaction data. An energy consumption analysis (ECA) of general trends across 57 sites was conducted alongside an in-depth ECA for three sites for which some historical data was available.

Sites who received visits were selected via purposive sampling to ensure that, as far as possible, users recruited through different methods, having different experiences of the tool (i.e. more / less support from AND TR) and a diversity of business types could be covered. The evaluation faced challenges in reaching users (businesses were often busy and did not pick up their phones / respond to emails), but overall, the eight businesses consulted were diverse in both their profile and their experience of using AEMS.

This report

The following chapters summarise the findings of the AEMS evaluation in terms of: the extent to which businesses in the pilot engaged with AEMS (Chapter two – Customer engagement with AEMS), and the extent to which those engaged businesses experienced the intended effects of AEMS (Chapter three – The results of the pilot of AEMS). The final chapter summarises the findings of the evaluation (Chapter four – Conclusion).

2 How businesses used AEMS

This chapter summarises how AEMS was piloted, the profile of pilot businesses and users, the scale and nature of their use of AEMS, and the features they found most and least useful.

How AEMS was piloted

Sixty-six businesses signed up to use AEMS throughout its pilot. These businesses ranged from small independent businesses through to individual shops within a larger chain of retail stores. AND TR initially sought to pilot AEMS within the retail and hospitality sectors, though other sectors such as manufacturing were ultimately able to access the tool. In total, AEMS was piloted at 47 retail sites, 10 hospitality sites, and nine others.

AND TR recruited customers to pilot AEMS through four different channels:

- AND TR recruited 41 businesses through a single chain of retail stores. In this case AND TR provided the head office of the chain with a login for each branch. For these sites, energy data was fed weekly onto the tool, so it had up to a one-week delay, depending on when the user accessed it. Due to technical issues it was not possible to enable live data feeds.

- Eleven businesses were recruited **directly** through AND TR's own network - typically (but not exclusively) these were businesses geographically close to the AND TR company office. Nearly all of these sites had live data feeds (except for one which had a one-day lag).

- A further six businesses were recruited **indirectly** through a third party energy efficiency consultant who visited businesses in person and encouraged them to sign up (these businesses did not have direct contact with AND TR). All of these sites had live data feeds.

- Eight businesses were recruited to AEMS **indirectly** through their energy supplier (again, these businesses did not have direct contact with AND TR). These sites had data feeds with a one-day lag.

A number of businesses directly recruited by AEMS had been part of the pilot during its initial development stage (Phase 1). As AEMS was in an early development stage when they first began to use it, they did not initially have access to the dashboard, only to analytic reports as well as, in some cases, advice on what could be done to save them energy. In turn, they provided AND TR with feedback to help them further develop AEMS. These users, who at the time of the evaluation had access to the dashboard, tended to have found AEMS useful and were highly engaged in using it.

The profile of the sites and users piloting AEMS

Site profile

AEMS was intended to be piloted by small independent businesses and by chain stores. Given the recruitment approach described above, 41 of the 66 sites (62%) were stores forming part of a larger retail chain.

User profile

The app and dashboard were designed to be used by a single user. It was assumed that this would be the person responsible for energy bills, as well as operations and equipment, who would have a personal interest in a tool that helped them to manage use and costs. The baseline survey and follow-up qualitative research found that the main users of AEMS tended to be business owners, operations directors and facilities managers.

The baseline survey also suggested that, prior to starting the pilot, half (four out of eight) of responding AEMS users felt very confident[5] in understanding some areas of their energy use, such as knowing what uses the most energy in their business; what changes they could make to their behaviour to save energy; and the times of day and days of the week their business use the most energy.

At the chain store which piloted the tool, responsibility for bills and energy management was held at the head office by the energy manager, who was also the person initially given access to the tool and with the role of disseminating tool access down to the stores within the chain. As this user did not make use of the tool, they also did not actively encourage the stores within the chain to use it (see below for discussion).

Level and scale of the take-up of AEMS

The recruitment approach taken by AND TR had an impact on whether AEMS was used by pilot sites beyond the point of recruitment. The findings suggest that genuine engagement with the tool occurred only where there was **a direct relationship / contact between AND TR and the end-users**.

Notably, the eleven **businesses which were given access to the tool directly through AND TR received significant amounts of tailored support**, including: setting up equipment to monitor usage of specific appliances or processes, interpretation of the data generated and analysis of potential energy use changes that could be made. This helped these businesses to realise energy efficiency changes in some cases (see Chapter three).

Ultimately, 41 of the 66 AEMS pilot users were not given the login details for access, did not make use of the AEMS login details or did not have a full understanding of the tool's function and therefore did not use it optimally. This is because the retail chain had established energy management practices prior to their trial of AEMS. Store managers received weekly energy reports from the head office, showing their daily consumption and a comparison of their energy use against their budget. The chain was initially interested in AEMS because they thought it

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[5] On a scale of 1 to 10, where 1 means not at all confident and 10 means very confident, half of the 8 business owners or managers surveyed (at baseline) gave themselves a score of 9 or 10 on these measures.

could provide live data that would alert them to problems with equipment as they occurred. As technical issues meant that AEMS could not provide this data for this chain, the AEMS logins and energy reports were not shared with store managers as they were considered to offer little additional value.

The six businesses recruited by a third party energy efficiency consultant also did not utilise the tool as intended by AND TR. This is because these businesses believed that AEMS had been set-up to monitor energy for the benefit of AND TR, rather than their own benefit. They agreed to take part as they saw no disadvantages to their energy consumption being monitored. However, with little awareness of AEMS's functionality and its potential to help them save energy, they did not actively engage with AEMS or realise its intended benefits.

User engagement and interaction

Amongst the active users of the tool interviewed for the evaluation, the frequency of using AEMS varied from weekly to monthly. In some cases, the frequency reduced over time as users obtained the information they needed (e.g. about equipment performance) and no longer considered that the tool was providing new information. For example, one user felt they understood their consumption which did not really change, and so did not need to check the dashboard as frequently.

However, one user believed the frequency of use would increase as they used AEMS to understand the impact of changing the operating times of a particular piece of equipment.

> *"At the moment, [we are using AEMS] probably once or twice a week, because of what we're looking at doing, and it'll probably be more on a daily [basis], I imagine, once I change the process, just to see what the effect is. Then it will probably drop back to once a week, I would imagine." – Manufacturing, factory, Facilities Manager*

AND TR's interaction data supports the findings from these interviews: 57 unique logins to the AEMS dashboard were created. Across these 57 logins, there were 132 dashboard sessions in the four-month pilot period, an average of 2.3 per user. However, the evaluation found that many users did not receive a login: among the sites that may have received a login and therefore had the opportunity to actively use AEMS, there was a minimum of eight sessions[6] on average, or around two per month.

Users interviewed during site-visits had not tended to use the mobile app. This seems to have been – at these sites - because of an association of AEMS with overall business management. For example, one user stated "*I've never bothered [to put AEMS on my phone], purely because I like to separate work from my phone*"; and another had created a desktop shortcut to the My AEMS webpage to enable easy access when carrying out (other) business administration operations (via the computer). However, the preference for online access may also have been because of the set-up of AEMS for some businesses. For example, one business, which was

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[6] This assumes that of the 57 sites for whom interaction data is available, a maximum of 16 received a login as the 41 branches of the retail chain are excluded since individual sites were not issued with logins by the head office, therefore the minimum average number of sessions for such users is 132/16=8.25. If fewer than 16 users received a login, the average among those who did would therefore be higher.

receiving highly detailed analytics from AND TR, received this information via email (which was then more easily viewed via a computer than a mobile phone).

User experience of the tool

Sites and businesses which most benefitted from AEMS

All the businesses consulted which reported benefits from the tool were independent (non-chain) businesses with complex energy use (i.e. multiple machines using energy). However, as the evidence base is quite limited, it is not possible to confidently conclude whether chain businesses and/or those with simpler energy use would also find AEMS useful.

The tool appears to have had greatest effect on businesses that were open to and interested in saving energy. This included both businesses with a pre-existing interest in energy efficiency (including a business already trying to reduce water wastage, as well as energy wastage) and businesses with no such existing interest, who were driven by the potential for cost savings and greater operational control.

The businesses which most benefited from AEMS were those which received tailored support from AND TR. Whilst this model of customer relationship could be challenging to scale-up, it does suggest that independent businesses might be a business type requiring a more tailored and personal energy management tool.

In addition, the businesses which received tailored support were often businesses local to AND TR offices (in part due to the ease of providing such support locally), with several of those consulted reporting that they agreed to participate in the pilot because they had nothing to lose and in doing so, they would be supporting a local business.

In both cases, such tailored support might not need to come from an innovator of smart energy management tools such as AND TR directly, or indeed a local business. For example, one of the businesses consulted spoke positively of other tailored support they had received from their energy supplier. There might therefore be greater potential for such support to be scaled-up via partnerships with larger organisations, such as energy suppliers.

Features that encouraged engagement

Amongst the more active users, **appliance-level monitoring** (such as that described in the quote above) **and energy use charts on the dashboard were the most useful elements of AEMS**. In turn, these facilitated the improved understanding of energy use and behaviour changes described in the next chapter. These features helped users:

- Better understand the times of day where spikes in energy and background level of consumption occur.

- See which days of the week they use more energy.

- (With appropriate monitoring equipment connected to particularly energy-intensive or more frequently used equipment), view the consumption of a specific appliance.

Limitations of AEMS

The AEMS dashboard provided users with insights based on their energy usage. However, users stated that they had not viewed the insights regularly as they did not provide further detail about what could be driving changes in consumption, or advice on how to reduce energy use. Crucially, in these cases, **the users themselves would need to have this understanding in order to interpret the data**.

> *"Some of these headlines could be used in communications out into the shop floor, perhaps. [It might say] 'Wednesday the 15th, you've used 58KWh less energy than that time the previous week. So, how did that work? You know, what was that down to?' We don't have the knowledge of our processes to work out why that is. That's not the fault of AEMS, it's the fault of our understanding." – Manufacturing, Factory, Facilities manager*

This, again, highlights the fact that AEMS worked best when the tool's products were presented to the user with support from AND TR and when they were tailored and made relevant to that business. Some insights were seen by one user as providing information that was obvious, such as usage being lower on a Sunday when the factory was not operational. Another user suggested the insights would be more helpful if they were focussed on specific equipment. This would entail equipment-level monitoring, which has been found to have been particularly helpful within other pilots:

> *"If [the insights were] more dedicated, so each piece of equipment is looked at separately, that way, something like that would be far handier, because then I can pinpoint exactly which piece of equipment is not performing as well as it should be performing." – Retail (Dry cleaner), Business owner*

As previously highlighted, for the chain sites, who did not have access to live data, the timeliness of data was crucial to utility. For example, one user within the chain, referring to the AEMS monthly reports, found that they were not regular enough to be of value.

> *"[The reports are] all retrospective […] what happened three Saturdays ago is too late." – Retail chain user*

3 The results of the pilot of AEMS

This chapter discusses the extent to which the expected results (outcomes) of AEMS were achieved (as anticipated in its theory of change (see Chapter one)).

AEMS was designed to increase users' understanding of their business's energy use. The tool was expected to achieve this by facilitating energy-data monitoring. As it increased monitoring and understanding of energy use, there was an expectation that AEMS would, in turn, lead to behavioural changes, increasing energy efficiency and cost-savings. The rest of this chapter provides limited evidence that this did occur in some cases.

Around half of the users interviewed indicated that AEMS **provided energy use information that they had not previously been able to access**. The support to interpret this data, provided by AND TR, helped users pinpoint pieces of equipment and business operations that consumed large amounts of energy, and some users report integrating the tool into their monitoring and management processes.

In a couple of cases, **this understanding led to improved practices** around how energy was used and to increased monitoring of energy bills. There is **some evidence to suggest that AEMS led to more efficient behaviours in at least some sites**, which may be inferred to lead to energy savings if sustained. Further, two out of six businesses visited reported that they had observed energy savings over the pilot period, which they attributed, in part, to use of AEMS.

Immediate outcomes

AEMS' effects on monitoring and understanding of energy use

In businesses with no or limited pre-existing energy management practices, AEMS improved monitoring and understanding of energy use, as described below. By contrast, within a chain organisation that already monitored energy use regularly, AEMS had a limited impact, due to the data feeds having up to a one-week delay, whereas the organisation was interested in accessing live data feeds.[7] As such, **AEMS in its current form may be most useful to smaller organisations with limited capacity for monitoring energy use through other means; if AND TR intends to recruit larger chains, further research and development may be necessary to enhance the AEMS offer against competitors**.

Users that already had some understanding of their energy consumption had hoped AEMS would add to their understanding by providing live data, but the tool did not provide this as they had anticipated. Live data would, for example, allow them to monitor how energy use changes as specific equipment is switched on and off, or to understand spikes as they happen, thus adding to their understanding of energy use.

None of the five microbusinesses interviewed (i.e. those with fewer than 10 employees) had previously monitored their energy use. **The ability to view daily usage trends on the AEMS dashboard helped them understand how their energy usage varied** from day to day, and

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[7] While AEMS pilot had a feature to process and feed live data into the tool, it was not possible to set up live data feeds for this group of users due to technical issues.

by time of day, and implement operational changes. Several of these cross-checked the usage on AEMS against energy bills, which provided reassurances that their bills were accurate or helped them to chase up on any inaccuracies.

> *"It gives you the information to then go back to the energy company and argue, 'Why is it an extra £50? Why is it £50, £100 dearer now than it was last month and last month I was using more energy?' Could be that you've come out of contract, or something, but at least it gives you the opportunity to be able to look at the information and go, 'Well, yes, as a business that makes sense,' or, 'No, that doesn't make any sense.'"* – Retail, Business owner

One microbusiness interviewed had learned from appliance-level monitoring that their ovens were a significant user of energy. **This led to them changing their business practices** by aiming to only have equipment switched on when it is needed. AEMS helped another microbusiness owner to identify higher energy use on the days an employee ran the business compared to the days where the owner did (see behaviour change case studies below).

Two organisations interviewed that were slightly more advanced in terms of energy management felt that AEMS had potential to help them save energy, but they had not spent enough time using the tool to realise this potential.

> *"[Until we understand] what makes up that profile we can't take action on it. When we have that [data] then, yes, it will make a difference. If we can see something that's out of the ordinary, suddenly there's a peak where there wasn't one, I will know what that will be, whereas, at the moment, we don't."* – Manufacturing, Factory, Facilities manager

AEMS' effects on energy use behaviour

The case studies below demonstrate how AEMS led to businesses adopting more energy-efficient behaviours. The case studies highlight a few important points about when and how AEMS can improve energy use behaviour:

- For microbusinesses with no previous history of monitoring energy use, AEMS data can give an understanding of energy consumption that can drive behaviour change.

- Insights provided by AEMS help to drive changes in employees' routine business practice that help more efficient behaviours to become embedded across organisations (and beyond AEMS' direct users).

Behaviour change case study # 1

Sector: Retail | **Size:** Microbusiness | **Energy supply:** Electricity only

Prior to using AEMS, this business owner rated their confidence as five out of ten in knowing which activities or pieces of equipment used the most energy in their business. Through using AEMS, they had learned that the ovens used for baking were a very significant user of energy. Previously, they were switched on when the shop opened and turned off at the end of the day. However, after understanding their impact on consumption, they changed the pattern of usage such that they only turned the ovens on when needed. Over time, this practice has become embedded among the shop floor staff, such that new staff have adopted it unquestioningly.

"I've got a new member of staff there, but as far as he's concerned, we turn it off and that's the way it is. He's not been here beforehand, he's just started …, so as far as he's concerned, that's part of our routine."

Furthermore, improved understanding of the energy consumption of the ovens led the owner to also consider if other machines were turned on for longer than they needed to be.

"Once we realised just how much the ovens were using, it then made me look at the whole business and go, 'Well, in that case, what don't we need on? What are we turning on out of habit, rather than because we need to use it? […] We've got overwrap machines and vacuum packers and things. Where we'd normally turn them on as soon as we get in, now we turn them on when we need them, [and] as soon as we're done with them, turn them off."

Behaviour change case study # 2

Sector: Retail | **Size:** Microbusiness | **Energy supply:** Electricity and gas

AEMS helped this business owner to see how usage varied by day, which made them realise that consumption was higher on the days their employee was running the shop rather than themselves. Therefore, while the owner reported they had previously switched equipment on only when needed, they were able to use information from AEMS to train staff in how to use equipment more efficiently. The employee now also turns off equipment when it is not required.

"I've always been like that, but on the days that [the employee] would come in, he'd go around and put everything on. I'd say to [them], 'Don't do that, only put on the bits of equipment that you're going to need, and don't put the dry cleaning machine on as soon as you get in, wait until we've got a load ready to go in,' because it only takes about fifteen, twenty minutes for it to warm up and to be ready for use.

Since we've had the bar charts come out, and that, I've said to him, 'Look, these are the days that I come in, you know, and that's usage, you can see it. Then on the days that you come in, the usage is higher, but you've done the same amount of work as I've done on those days. So, what are you doing differently to me?' 'I don't know,' and when we looked at it, it was the fact that he's just come in and put everything on."

Increased discussion of energy use

Amongst microbusiness users, **AEMS also increased the level of discussion on energy use within the business**. Since using AEMS, they had discussed energy use and the need to make behaviour changes, i.e. owners had spoken to staff about switching equipment off and one user from a moderately energy-focused business was prompted to discuss spikes in usage that they had observed via AEMS with colleagues.

The most energy-focused businesses interviewed were already discussing energy use, for example providing staff with energy reports that covered the energy consumption for which they were responsible. This was unchanged after using AEMS.

Adherence to energy budgets

A key feature of AEMS is that it compares energy use against a budget and can also issue 'push notifications' via the app if the budget is exceeded, where the app would notify the user (via a message and noise or phone vibration) without them having to login to check. Some users noted that, in principle, they would be motivated to set and adhere to a budget; but felt the target set by the tool was either arbitrary or unrealistic. Others were not motivated by this feature, believing current consumption was justified by business need.

Three business owners consulted had been reticent to set a budget, as consumption was driven by demand, which varied from day to day. As such, a day in which they adhered to a budget could in practice reflect a day with less business.

> "I don't understand how I'll be able to set a budget. I can't say, 'Okay, once I get to X amount of kilowatts that day, I'm going to stop working,' because then I'll be letting customers down. So, unfortunately, it's a reactive business, and if the work's there, the machines are on and we work. As soon as we finish with one piece of equipment, it's turned off." – Retail (Dry cleaner), Business owner

Notably, these businesses all found AEMS beneficial, particularly its equipment and half hourly monitoring, and each reported that their use of AEMS had led them to change the way they used energy within the business. Some users noted the specific value of the budget as a barrier to using it. The budget can be set manually by the users; however, these users felt they needed more time with the tool to understand their consumption and potential reductions in order to set an optimal budget.

> "The system sets a fairly aggressive target, I think, to look at, as a reduction, which, I think, value-based is on 10%, something like that, that applies as a default. Whether that's realistic to our business, it may be once we get into the process of the tanks and replacing the lights, we might actually realise that, but, I think, at the moment, that's pretty aggressive." – Manufacturing, Factory, Facilities manager

Overall, the evidence does not suggest strongly that budgets appealed to users of AEMS. This seems to have been because users felt budgets oversimplified energy use. For example, energy might vary month on month depending on the level of activity going on (e.g. a busy month of sales), but this might not necessarily reflect energy inefficiency – for example, by using AEMS half hourly data to identify wastage, the business might still use less energy than it would have done otherwise and a standard monthly budget might not reflect this.

Some of the user feedback suggests budgets *could* be useful/motivating, but only if set at an appropriate level. This will vary for each business, as for example, a business that is highly inefficient would be able to reduce their consumption by a greater proportion than one that has already implemented a range of energy efficiency measures. As businesses may not be able to calculate what a feasible, but stretching, budget should be, this may require input from tool developers. Given the limited use of budgets within this evaluation, it is not possible to say if businesses would stick to a well-tailored budget, but the evidence suggests such tailoring would be necessary for success.

Medium-term outcomes: the effects of AEMS on energy consumption and energy bills

Amongst those who actively used the tool, AEMS helped users to monitor their energy use, pinpoint processes and equipment that was using most energy, and introduce habits and processes that would reduce energy waste. At two sites energy savings were reported. Based on an assessment of the available evidence, there is a **medium level of confidence that AEMS contributed to energy savings in at least some sites**. This is based upon the following sources of evidence:

- **Self-reported behaviour change**: Two businesses using AEMS, visited as part of the evaluation, showed clear evidence of behaviour change (e.g. switching off / using equipment less) which they assigned to use of the tool. A further two had started using the tool and considered it might benefit them, but they had not had sufficient time to put any changes into action, though they had started planning / thinking about such changes (e.g. in one case how they might moderate the temperature of their water heater).

- **Self-reported energy savings**: At two sites, the users consulted reported seeing savings in their energy bills, with one of these users reporting monthly bill savings of £150 which they attributed to use of AEMS.

- The **assumptions underpinning the overall AEMS theory of change** were tested at all sites, and for two sites these occurred as anticipated (for example, AEMS was able to provide new information to users), but not at others.

- At all sites visited, **possible alternative theories of change** were investigated and at two of the sites, AEMS appeared to be contributing to changes in energy management and use, but at other sites, other drivers appeared to be more prominent.

- An **in-depth ECA** was conducted for three sites, including the site which had observed lower energy bills. At this latter site, a 5% reduction in energy consumption was observed when comparing the first 8 weeks of historical data (February and March 2019) to the last 8 weeks of pilot data (December 2019 to January 2020). As both time periods covered winter months, the historical data provided a reasonable baseline. (however other seasonal factors beyond weather may remain). Therefore it is reasonable to infer that AEMS contributed to energy savings at this site. For a second site, a 1% reduction was observed when comparing pre-post pilot comparison (February to September 2019 against September 2019 to January 2020). At the third site, analysis carried out with a shorter period of historical data (September 2019 until January 2020) found no change.

- An **ECA** conducted for all participating pilot sites showed negligible changes (0-1%) in average daily consumption compared to pre-pilot. However, a lack of historical data meant it was not possible to compare the same months pre and post intervention. Therefore, it is not possible to firmly establish a relationship between this observed trend and use of AEMS.

For each Competition tool, the evaluation assessed the extent to which they had contributed to energy savings at pilot sites, and the strength of the evidence supporting this. Eight 'types' of evidence were defined and scored for strength (see Table 2 in Annex 2). A higher score was given to evidence which was observed (e.g. energy consumption data) and triangulated

(displaying a convergence in qualitative evidence and energy consumption data) or identified at a larger number of sites.

An overall score was derived to give an **average confidence rating in the evidence available: AEMS scored 1.25 i.e. there is a 'medium level of confidence that the tool has contribute to energy savings in at least some sites'**. The scores and associated confidence ratings are outlined in Table 1 below. Annex 2 provides more detail on how the score was derived.

Table 1: Energy savings confidence ratings (AEMS rated 1.25 'medium level')

0- 1	Low level of confidence that the tool has contributed to energy savings at any site*
1 – 1.99	**Medium level of confidence that the tool has contributed to energy savings in at least some sites**
2 – 2.99	High level of confidence that the tool has contributed to energy savings in at least some sites
3 to 4.5	Very high level of confidence that the tool has contributed to energy savings in at least some sites

* A low level of confidence does not preclude the tool from working in the future, if some adjustments / lessons learned are taken on board.

Longer-term outcomes

This section considers AEMS' progress towards the longer-term impacts outlined in its theory of change. It was not expected that such outcomes would be realised in full by the end of the Competition, as many pilot participants who participated in the evaluation research had been using AEMS for less than a year.

- In the long-term, it was expected that AEMS would: Create ongoing energy consumption reductions for the piloting businesses through continued use, improved energy management, increased engagement in the energy market, and investment in more intelligent monitoring systems.

- Be taken up by (and benefit) businesses beyond the piloting sites via word-of-mouth recommendations (amongst other means of dissemination).

- Contribute to increased customer / staff comfort, reduced operational costs and green branding for the businesses using it.

The evidence from this evaluation suggests that, for some users, **AEMS will continue to generate energy saving benefits**. As discussed above, AEMS encouraged some users to engage more with their bills and to become more efficient in their energy management. Several of these had been involved in piloting earlier versions of AEMS, through Phase 1, and were still finding it helpful as a way of monitoring energy waste, thus demonstrating that **use of AEMS can have longevity.**

These users also indicated that they would be prepared to - and interested in - investing in more intelligent monitoring systems, such as equipment-level monitoring. However, the extent

to which AEMS itself had encouraged this attitude is not clear - the users who were interested in further investments had a pre-existing interest and predisposition to monitoring their energy use (mainly because of the increased operational oversight it gave them) and may therefore have made such investments anyway, even if they weren't using AEMS.

Where AEMS users had sustained their engagement with the tool over months or years, it seems to have been the interaction with AND TR and the regular reports provided, *as well as* having access to the tool, that sustained their interest in the tool. This suggests that 'human interaction' and the provision of expertise (e.g. to interpret the data) alongside the tool has been quite critical where AEMS has benefitted its users. In addition, there is some evidence that the motivation to support a local business (whilst feeling they had nothing to lose by doing so) was a factor driving continued engagement amongst some users.

Those that had benefited from AEMS reported that they would recommend it if asked. One user noted they would particularly highlight the benefits to a new business.

> *Yes, I would [recommend it], especially to a young business just starting up, [to] give them a better understanding of energy and where their bills are going to. We set our business up years ago and I think if we'd have had a better understanding how things worked, I might have purchased things differently. I might have gone, '…That's probably not the best piece of kit to buy. It might look good, but actually it's going to cost me a fortune to run.'" – Retail, Business owner*

However, the evaluation had not uncovered significant evidence of users recommending AEMS to other businesses and conclusions on this cannot yet be confidently drawn.

In terms of other benefits to business, two of the businesses consulted certainly commented that the analytics provided by AND TR had saved them operational costs to the extent that it provided them with some data on e.g. equipment energy use, which they would have otherwise had to have calculated themselves. Several businesses were also using AEMS to better analyse their energy bills and had chased their energy suppliers when bills did not match the AEMS data. This suggests that use of AEMS might indeed, in some cases, generate operational benefits.

The evaluation did not identify any evidence of AEMS' impact on customer or staff comfort, but this was because, amongst the businesses consulted which were using and benefitting from the tool, staff/customer comfort was not a relevant or priority issues. These were businesses whose customers pass through the site quickly and/or businesses using heat-producing equipment that cannot be adjusted (they were two manufacturing businesses, a business selling foods and a dry cleaners).

Neither did the evaluation uncover any evidence of the longer-term impacts of AEMS use on business reputation. However, again, this seems to have been because the businesses consulted did not have a 'green branding' objective. One business owner interviewed did have an interest in energy efficiency, but this appeared to have been from an operational perspective rather than a wider green one.

4 Conclusions

This report aimed to explore the extent to which AND TR's energy management system, AEMS, was able to support businesses in reducing their energy consumption.

The evaluation has found that, where users actively engaged with AEMS and felt that it gave them additional insights into their energy consumption, AEMS greatly increased their understanding of their energy use, supported changes in energy use behaviour and led, in a couple of cases, to energy savings being made. Overall, the evaluation has a medium level of confidence that AEMS has contributed to energy savings in at least some sites.

Small businesses most benefitted from the tool when it provided them with new information in an easily accessible format. In several cases where AEMS was successful, AND TR was providing the analysis in report form, alongside advice as to how to interpret and apply the data. This required very little input from the business and was therefore considered attractive. When businesses engaged with the data themselves without support, some found it complicated, requiring of time to interpret, or insufficiently granular for them to use. These varied views may be linked to the fact that some users piloted slightly different offers and/or were involved in piloting AEMS at different stages (with those piloting it during Phase 1 receiving more people-led support).

Evidence from interviews suggests that engagement was a barrier to the success of the AEMS pilot. A large proportion of pilot users were part of a chain which ultimately did not share log in details or energy reports with store managers. This was because they felt the tool did not provide additional insights (such as live data) beyond the energy management platform already used. Similarly, several sites were recruited to the pilot indirectly (by a head office representative or third party energy efficiency consultant), which did not necessarily enable an appropriate introduction and on-boarding to the tool. In addition, the alert function of AEMS, which might have been attractive to some users, was not utilised as expected, because the 'push' notifications were only available on the mobile app and users preferred the online accessed tool, which did not immediately notify users about abnormalities.

The findings from this report suggest AND TR could take forwards the following points as it progresses its commercial offer:

- AEMS was effective in engaging businesses and driving behaviour change when in combination with a significant amount of tailored support from AND TR. This personalised support was instrumental in engaging businesses with the tool initially, in helping businesses interpret their data, and in helping businesses realise energy savings. AND TR may therefore need to consider how such support could be viably integrated and promoted as part of their commercial offering.

- There were a few instances of small businesses with some prior interest in energy management taking the time to analyse the data themselves. These organisations may not require the same level of ongoing support as less energy-focused organisations providing they receive sufficient personalised support during the onboarding process to prompt initial engagement.

- AEMS in its current form may be most useful to smaller organisations with limited capacity for monitoring energy use through other means; if AND TR intends to recruit

larger chains, further research and development may be necessary to enhance the AEMS offer against competitors.

- Evidence suggests that live data feeds should be provided to all users, wherever possible. Some users strongly advocated that the tool should include live data, for example to monitor how energy use changes as specific equipment is switched on and off, or to understand spikes as they happen, rather than a day later. One chain business with pre-existing energy use monitoring in place did not engage with AEMS because technical issues meant that the tool could not provide additional insights, such as live data feeds.

- In addition, AND TR may consider implementing equipment-level monitoring more widely. This could address customer requests for more granular data to monitor particular appliances and consumption spikes. Some users who did not have access to equipment-level monitoring were interested in it, to help them to interpret their energy use data. One user who had access to equipment-level monitoring planned to use the insights to drive a wider energy saving project across the company.

- The energy insights included in the tool were not widely used as they did not provide further detail about what could be driving changes in consumption, or advice on how to reduce energy use: for this element of the tool to be more beneficial and help realise the full range of benefits of AEMS, such as encouraging positive energy efficiency changes, consideration should be given to how the insights could provide specific and tailored advice to businesses on how to save energy.

- Users had not made use of the functionality to set and adhere to energy budgets, as the budgets were not considered relevant. The evidence suggests further consideration may be needed as to how to help businesses set appropriate budgets, to which they might then aim to adhere. This could include allowing a certain period of time from starting to use the tool for the business to establish their typical usage and therefore help set a budget; advice on a realistic percentage reduction in consumption depending on the existing levels of energy efficiency; or allowing users to input the output or production levels of their business, such that if this increases, the budget can increase accordingly. However, given the findings of this evaluation, it is highly likely that users would need support (e.g. from AND TR) to input this data at the beginning.

Annex 1 Methodology

The research for this evaluation was conducted by Ipsos MORI in conjunction with their consortium partner, the Carbon Trust. Ipsos MORI designed the evaluation approach and designed and delivered all aspects of the methodology, except for the energy consumption analysis which was designed and conducted by the Carbon Trust. The evaluation was led by a dedicated evaluator at Ipsos MORI who followed the implementation of the tool through its design phase (Phase 1), feasibility and initial testing (Phase 2) and roll-out and further testing (Phase 3).[8] The final evaluation report, and reports for the other six case studies, are available on www.gov.uk.

Evaluation approach

This evaluation aimed to assess the extent to which AEMS generated its anticipated outcomes and impacts and the circumstances in which these were achieved. A case and theory-based approach was taken to provide a framework for in-depth analysis of change within pilot sites.

The theory-based approach used the AEMS theory of change as its framework. This was first developed in Autumn 2018 by Ipsos MORI in consultation with AND TR and BEIS, through analysis of AND TR's business proposal, points discussed at AEMS inception meetings and familiarisation interviews with the AEMS project lead and key consortium. The extent to which anticipated change (i.e. results) took place as observed – and evidence to demonstrate that AEMS had contributed to this change – was assessed and is described in this report.

Sources of evidence and fieldwork activities

The evaluation has been developed on a triangulation of evidence available over the course of the evaluation. This includes a review of project documentation submitted to BEIS, end-of-Competition reports, correspondence between AND TR and the evaluation team, a programme of qualitative interviews with pilot sites and evidence gathered through site visits, an online survey with sites, and an energy consumption analysis.

- **Online survey with users**: The survey[9] included between 20-30 questions[10] covering tool usage habits, attitudes to energy, energy management behaviours, actions taken following engagement with the tool and other questions to understand the context of the business and the user (such as the business size, user role). The baseline survey gained 15 responses, but the endline survey only returned one response, thus the survey results have informed very little of the analysis for this evaluation.

- **Case study visits**: Six site visits were carried out by Ipsos MORI with AEMS participating sites in January and February 2020. The visits involved in-depth interviews with the staff member using the app. In most cases this was conducted with the owner and/or manager of the site. Discussion topics included the individual's responsibilities with respect to energy management, approaches to monitoring energy use, how they

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[8] The evaluation lead met regularly with the tool's design team, liaising with them on the evaluation plan, designed the evaluation's methodology, managed the team of data collectors and the development of this report.
[9] An example survey questionnaire used across NDSEMIC projects is included in the evaluation Technical Report, available on www.gov.uk.
[10] The exact questionnaire length for each respondent varied depending on the project and type of participant/organisation.

had used AEMS, to what extent they had shared the tool and its impacts. Participants were also **observed** interacting with the dashboard to understand this in more detail and to capture their actual usage behaviours, rather than self-reported actions. Four of the interviews were with independent business users of the app (either the owner or a staff manager charged with managing energy). The remaining two were with employees of a retail chain which were using the apps across several sites.

- **Telephone Interviews**: In addition, two telephone interviews were completed with two non-users of the app, following a simplified interview schedule focused on why they did not engage with the tool.

- **ECA**: An analysis of energy consumption data conducted for all participating pilot sites showed negligible changes (0-1%) in average daily consumption compared to pre-pilot. However, a lack of historical data meant it was not possible to compare the intervention period (ending January 2020) with the same months pre and post intervention. Therefore, it was not possible to firmly establish a relationship between this observed trend and use of AEMS.

  An in-depth ECA (which accounted for other variables which might affect energy use within the site) was conducted for three sites. At two of these sites, historical energy data was available for 5-7 months before the intervention and for an intervention period of 5-7 months. At the third site, the period of historical data was four months, and data was collected only daily rather than half hourly.

- **Project documentation and correspondence**: As part of the Competition, AND TR (and the other Competition Partners) were expected to regularly update BEIS and the Ipsos MORI evaluation team on their delivery progress and learnings via milestone deliverables and project documentation. This was reviewed by Ipsos MORI and has supported the analysis in this report. Additionally, the evaluation team had regular bi-weekly updates with the Competition Partner to establish progress with the project and collate necessary information (e.g. recruitment challenges, partnership relationships etc.). Further documentation was made available to the Ipsos MORI evaluation team through AND TR's end-of-Competition report and in most cases provided useful supplementary information directly to the evaluation team.

Limitations of the methodology

Overall, the limitations of the methodology were primarily as follows:

- **Low response rate for surveys**: Despite multiple reminders being sent by both Ipsos MORI and AND TR, and the offer of a financial incentive for completion, only one business took part in the endline survey, restricting the evidence base for the evaluation to those who took part in qualitative research and the ECA. In addition, limited response to surveys meant that it was not possible to carry out before-and-after analysis, meaning the evaluation relied on users' own assessment of how their attitudes and awareness of energy had evolved since engaging with AEMS, which is more subjective than a before-and-after analysis would have been.

- **Limited number of engaged tool users**: As described in Chapter two, many of the pilot sites had not received a login or actively engaged with AEMS. This limited the pool of participants to the evaluation and the evidence base on which to assess the impact of the tool.

- **Limitations of the ECA**: As discussed above, the ability for the ECA to identify impacts was limited by a lack of historical energy consumption data and, in some cases, other data quality issues.

Annex 2 Assessment of AEMS' contribution to energy savings

Assessing the energy saving potential of smart energy management tools was central to the evaluation, however in the context of the Competition it was not possible to collect a single definitive estimate of impacts and there were a range of challenges in using and interpreting energy consumption data for pilot sites. In recognition of the circumstances involved (limited access to historical data, small sample sizes, no control groups), a mixed-methods approach to evaluating energy savings was taken.

This approach drew on a range of evidence (outlined in Annex 1) to create a summary indicator of the evaluation's confidence that the tools had contributed to energy savings for pilot sites (by comparing the findings of energy consumption analysis, self-reported savings, and evidence of behaviour change from qualitative interviews). An analytical framework that considered both the strength of evidence, and its robustness, was used to produce the indicator (see Table 2 overleaf). The methodology for this described in more detail in the Final Evaluation Technical Report published alongside this evaluation.

On the basis of these assumptions and the evidence available, an analytical 'strength of evidence' framework was developed which, when applied, generated a confidence rating in the evidence of energy savings for each pilot. This confidence rating was illustrated in Table 1 in Chapter three and is recopied at the end of Table 2.

Table 2: AEMS contribution to energy savings – evidence strength assessment

Evidence 'type'	Description of evidence type	Numerical rating of evidence type
Energy Consumption evidence		
Observed energy consumption reductions – (across all pilot sites, when comparing data over time and against pre-intervention data).	An ECA conducted for all sites for which energy data was available showed negligible changes (0-1%) in average daily consumption compared to pre-pilot. However, strong conclusions could not be drawn from this as a lack of historical data meant it was not possible to compare the same months pre and post intervention.	0[11]
Observed energy consumption reductions that align with user-reported evidence of changes in energy use behaviour. Suggests *potential* that tool use has contributed to energy savings.	An in-depth ECA was conducted for three sites, including the site which had observed lower energy bills. At this site, a 5% reduction in energy consumption was observed when comparing the first 8 weeks of historical data (February and March 2019) to the last 8 weeks of pilot data (December 2019 to January 2020). As both time periods covered winter months, it was possible to discount seasonality as a factor driving consumption reductions and, overall, the data supports a conclusion that AEMS contributed to energy savings at this site. For a second site, a 1% reduction was observed when comparing pre-post pilot comparison (February to September 2019 against September 2019 to January 2020). At the third site, no energy consumption reduction was observed, though this may have been due to data quality (only daily (not half hourly) data and a short period of historical data available).	4[12]
User-reported evidence		
Self-reported energy savings (e.g. user can point to cost reductions in	At two sites, the users consulted reported seeing savings in their energy bills.	2[13]

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[11] This group of evidence could be rated as either "not evident" (0), evident but only with red quality rating (1), evident with an amber quality rating (3) or evident with a green quality rating (4.5).

[12] This group of evidence could be rated as either "not evident" (0), evident but only with red quality rating (2), evident with an amber quality rating (4) or evident with a green quality rating (6).

[13] This group of evidence could be rated as either "not evident" (0), evident at 1-2 sites (2), evident at more than 1-2 sites (4) or evident at most sites consulted (6).

Evidence 'type'	Description of evidence type	Numerical rating of evidence type
bills) that the user assigns to use of the tool.		
Multiple users at one site converge in reporting behaviour change, inferred to lead to energy savings, that users assign to use of the tool.	At none of the businesses visited was more than one user consulted.	0[14]
One user reports behaviour change, inferred to lead to energy savings, that users assign to use of the tool.	Two out of the six businesses visited showed clear evidence of behaviour change (e.g. switching off / using equipment less) which they assigned to use of the tool. A further two had started using the tool and considered it might benefit them, but they had not had sufficient time to put any changes into action, though they had started planning / thinking about such changes (e.g. in one case how they might moderate the temperature of their water heater).	2[15]
Behaviour change reported via survey assigned to use of tool.	The single survey result received did not indicate a contribution to energy savings (i.e. no behaviour change was reported that could be attributed to AEMS).	0[16]
Theory-based evidence		
Evidence of the assumptions considered necessary for change to occur (as per the theory of change) occur as anticipated. This suggests all of the necessary conditions for energy savings are available.	The situations observed through the site visits and telephone interviews were also compared to the assumptions underpinning the AEMS theory of change (e.g. around how user interest would be gained and sustained) and were found to have held true in a couple of cases, though not in all.	1[17]

[14] This group of evidence could be rated as either "not evident" (0), evident at 1-2 sites (2), evident at more than 1-2 sites (4) or evident at most sites consulted (6).
[15] This group of evidence could be rated as either "not evident" (0), evident at 1-2 sites (2), evident at more than 1-2 sites (4) or evident at most sites consulted (6).
[16] This group of evidence could be rated as either "not evident" (0), evident at 1-2 sites (1), evident at more than 1-2 sites (2) or evident at most sites consulted (3).
[17] This group of evidence could be rated as either "not evident" (0), evident at 1-2 sites (1), evident at more than 1-2 sites (2) or evident at most sites consulted (3).

Evidence 'type'	Description of evidence type	Numerical rating of evidence type
No evidence of alternative theories of change for observed, reported or hypothesised energy savings.	At all sites visited, the potential for other factors (e.g. pre-existing efficiency drive, change in building/business operating hours or reduced building use) that might drive change was investigated. At a couple of sites, AEMS appeared to have been a key driver of change, but at others alternative explanations could not be ruled out.	1[18]
Overall score (max. of 37.5)[19]		**10**
Averaged score (max. of 4.5)[20]		**1.25**
RAG rating		**Medium**

Table 1 (repeated): Energy savings confidence ratings (AEMS rated 1.25)

0- 1	Low level of confidence that the tool has contributed to energy savings at any site*
1 – 1.99	**Medium level of confidence that the tool has contributed to energy savings in at least some sites**
2 – 2.99	High level of confidence that the tool has contributed to energy savings in at least some sites
3 to 4.5	Very high level of confidence that the tool has contributed to energy savings in at least some sites

A low level of confidence does not preclude the tool from working in the future, if some adjustments / lessons learned are taken on board

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[18] This group of evidence could be rated as either "not evident" (0), evident at 1-2 sites (1), evident at more than 1-2 sites (2) or evident at most sites consulted (3).
[19] The maximum overall score differs for some Competition projects as some of the evidence types are not available for some project evaluations.
[20] This is calculated by dividing the maximum possible overall score by the number of evidence types considered (8 in this case) and rounding to the nearest 0.5 decimal.