Department for Energy Security & Net Zero

Public Sector Smart Meter Guide

An introductory guide to smart meters for smaller sites in the public sector including schools and local authorities

June 2023

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- Bedford Borough Council

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- Solihull Metropolitan Borough Council

- Together Housing Association Limited

- West Berkshire Council

- Carbon Architecture Limited

Case study information referenced in this document has been verified by the relevant public sector organisation.

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About this Guide

Who is this guide for?

This guide is for public sector decision makers within local authorities, schools, NHS Trusts, and emergency services. It provides guidance to those working on energy and sustainability projects, broader estates management, and finance. As well as the wider introductory section, the guide offers frequently asked questions and includes a selection of case studies. The case studies demonstrate how some public sector sites, including schools, the NHS and housing associations have improved their energy efficiency and saved on costs through monitoring energy consumption, aided by the availability and access to energy consumption data via a smart meter.

Background

The transition to a more flexible energy system will play a vital role in decarbonising the energy sector and helping to deliver net zero carbon emissions by 2050. Smart meters[1] are one simple but important step on this journey, and public sector organisations have an opportunity to demonstrate leadership through changes to their own estates.

Smart meters are newest gas and electricity meters replacing traditional gas and electricity meters across Great Britain as part of an essential infrastructure upgrade that will make our energy system cheaper, cleaner, and more efficient. They play a critical role in modernising the way we all use energy and are aiding the transformation of the retail market so that it works better for energy consumers, bringing an end to manual meter reads and estimated billing. The half-hourly energy consumption and price data recorded by smart meters is driving new approaches to managing demand. Innovative products such as smart 'time of use' tariffs reward organisations for using energy away from peak times and enable technologies such as electric vehicles and smart appliances to be cost-effectively integrated with renewable energy sources.

Many households, small businesses, and smaller public sector sites, including local authorities and schools across Great Britain, are already benefitting from smart meters, allowing them to take control over their energy usage and adapt their behaviours to save money on their energy bills. At the end of 2022, there were 31.3 million smart meters in homes and small businesses and parts of the public sector in Great Britain[2], of which 1.7 million were in the non-domestic

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[1] In this Guide, "smart meters" refer to both SMETS2 and AMR meters. For more information, see the "Smart Meter Mandate" section on page 3.
[2] Smart Meter Statistics in Great Britain: Quarterly Report to end March 2023
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1143890/Q4_2022_Smart_Meters_Statistics_Report.pdf

sector making up 52% of all non-domestic meters. Energy suppliers have fixed annual installation targets from January 2022, designed to drive rollout progress.

Public sector organisations have an opportunity to take the lead on the transition to a more flexible and decarbonised energy system. If your organisation would like a smart meter, speak to your energy supplier, framework provider or third-party intermediary, and they will set the process in motion. Energy suppliers can work in coordination with public sector organisations to plan and manage installations.

Below are some frequently asked questions which we hope act as a guide to understanding more about smart meters and to ensure you make informed choices.

Frequently Asked Questions

1. What is a smart meter?

Smart meters are the newest gas and electricity meters. They can automatically send up to half-hourly energy consumption data to your energy supplier, ensuring they bill your organisation accurately. There are currently two types of smart meters in the non-domestic market; Automated/Advanced Meter Reading (AMR) meters, and meters which meet the Smart Metering Equipment Technical Specifications (SMETS meters). The amount of information an AMR and SMETS meter provide is different. AMR meters, at a minimum, provide energy usage information whereas SMETS also provide tariff information.

2. What is the smart metering mandate?

The "smart metering mandate" refers to sites in scope of the non-domestic smart meter rollout. It covers sites in electricity profile classes 1-4 or with gas consumption below 732 MWh per annum. These tend to be smaller non-domestic sites.

Large electricity supplies (profile classes 5-8 and 00) and large gas supplies (consumption over 732 MWh/year) are required by energy supply licence conditions (regulated by Ofgem) to have Advanced Meter Reading (AMR) meters fitted which measure consumption every half hour (or at least every hour for gas) and transmit readings to the supplier. These tend to be larger non-domestic organisations, such as Industrial and Commercial (I&C) businesses.

The rollout of smart meters to non-domestic sites within the smart metering mandate is estimated to lead to £1.5 billion of energy savings[3], driven by these organisations engaging with their smart meter data and identifying ways to reduce their energy use. Three million meters (across two million sites) are in scope of the smart metering mandate. These cover a range of organisations and sectors, including pubs and restaurants (hospitality), shops (retail), schools and local authority buildings (public sector). 70% of sites in the smart metering mandate are microbusinesses[4].

As of December 2018, all microbusinesses within the smart meter mandate must be offered a smart meter that complies with the latest Smart Metering Equipment Technical Specifications (SMETS) by their energy supplier. Non-microbusinesses within the mandate (such as some public sector organisations) can be offered a choice of SMETS or AMR meter, but the choice must include SMETS.

Speak to your energy supplier about the best metering solution for your organisation.

3. How would I know if I have a smart meter or a traditional analogue meter?

If you have not changed your meter since before 2017, and it either has a dial or an analogue meter display with 4-6 black and white (and some red) numbers, it is very likely that you have a traditional analogue meter. You might have a smart meter if it has a digital display and you do not have to provide occasional meter reads – smart meters can send meter readings to your energy supplier automatically.

Due to the wide range of smart and traditional analogue meters it is not possible to be definitive about the visible differences between them. However, we have included below some examples of both traditional (analogue meters) and smart meters.

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[3] Smart Meter roll-out cost-benefit Analysis - 2019:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831716/smart-meter-roll-out-cost-benefit-analysis-2019.pdf
[4] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/920211/non-domestic-smart-metering-guidance.pdf

Examples of smart meters – electricity and gas
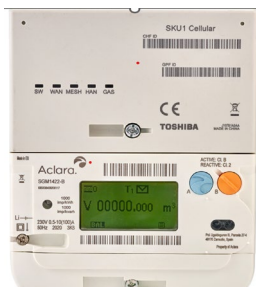
Examples of traditional (analogue) meters – electricity and gas

If you are still unsure about what meter you have, please contact your energy supplier who will be able to advise. You might also need to contact your local authority if they are the contracted customer.

4. What are the benefits of smart meters?

- Sending automatic energy readings directly to your energy supplier, meaning that your organisation will no longer have to provide manual meter readings.

- Smart meters offer the ability to monitor and manage your organisation's energy usage and spend, providing you with the opportunity for greater control through enhanced data insight, which can also help drive energy efficiency behavioural changes.

- Energy suppliers and third-party providers are increasingly offering tools which use smart meter data to offer bespoke services. For schools, this has also included energy education programmes for pupils. In July 2022, Government announced further changes to the supplier data offer. We have explained this in more detail in question 10 of this document.

- Half-hourly smart meter energy use data can be used by energy suppliers to buy and pay for the electricity that their customers use each half an hour, known as half-hourly settlement, rather than basing this on estimates. Half-hourly settlement will help to make the electricity network more efficient, greener, and cheaper to run, which could mean lower bills for your organisation.

- The move towards a flexible electricity system is crucial for enabling more use of renewable energy helping Great Britain towards net zero. Smart meters enable renewables, such as solar, to be better integrated to the grid. This helps to reduce the country's dependency on

imported fossil fuels, making our energy system cheaper, cleaner, and more efficient, as well as increasing our energy security.

5. Why is the government encouraging public sector organisations to have smart meters?

The Government wants as many organisations as possible to benefit from smart meter installations, given the crucial role they continue to play in ensuring cost-effective progress toward our net zero commitment in the next five years and the benefits they provide to organisations including the public sector.

In June 2020, the government confirmed a new four-year policy Framework (the 'Targets Framework')[5] with fixed minimum annual installation targets for energy suppliers, subject to tolerance levels. This Framework built on the progress made under the previous 'all reasonable steps' (ARS) regulatory obligation that was in place from 2012 to 2021 and is intended to drive the investment and momentum needed to achieve the highest levels of smart coverage by 2025. The four-year Framework applies to all domestic and non-domestic energy suppliers and took effect from 1 January 2022.

6. How do I get a smart meter?

You should ask your energy supplier what you need to do to arrange a smart meter installation, they may also contact you directly.

If you are not directly responsible for paying your energy bills, we would advise that you contact your business manager or local authority who should contact the relevant energy supplier about how to have a smart meter installed.

7. Is it free to install a smart meter?

Energy suppliers generally offer smart meters at no additional cost to businesses or public sector organisations. Occasionally, additional works might be needed before a supplier can complete your smart meter installation. If this is the case your energy supplier would be able to advise on next steps and any associated costs.

8. How long do installations take?

Installations normally take about two hours, arranged in advance so that you can make any necessary arrangements beforehand to ensure minimal disruption to your normal business operations. Your energy supplier will provide you with more information before the installation.

9. Can I arrange installation outside of working hours?

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[5] Delivering a smart system: government response to a consultation on smart meter policy framework post 2020: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/893124/delivering-smart-system-post-2020-govt-response-consultation.pdf

Energy suppliers will work with you to find a time that is convenient for you. Some suppliers offer weekend or weekday out-of-hours installation appointments to minimise disruption; please speak to your supplier.

10. Can my organisation have access to our smart meter energy consumption data?

Energy suppliers must regularly raise awareness to their business and public sector customers of how they can access (or nominating a third party to access) their smart meter data for free.

Businesses and public sector organisations of all sizes (and any third parties acting on their behalf with their consent) can contact their energy supplier to request their smart meter energy use data from the past year. Energy suppliers must provide this for free and meet requests within ten working days.

From 1st October 2024, energy suppliers must provide their smaller business and public sector customers with free and regular information on their energy use, based on their smart meter data. Your energy supplier will advise you on how they will be delivering this information.

You can read more about the government policy on smart meter data access for business and public sector organisations at: https://www.gov.uk/government/consultations/maximising-non-domestic-smart-meter-consumer-benefits-improving-the-data-offer-and-enabling-innovation.

Case Studies

This guide has compiled responses from public sector stakeholders that have already benefitted from using smart meters on their estates. Figure 1 reflects some of these benefits and may help your organisation understand how to get the best use of smart meters. Overall, "monitoring and management" and "accurate accounting and billing" were the most common benefits cited by the public sector organisations surveyed.

Figure 1: Summary of reported smart meter benefits from public sector organisations, August 2021.

Source: Responses from 19 public sector organisations collected by Carbon Architecture in August 2021.

Solihull Metropolitan Borough Council have smart meters in all their local authority-maintained schools. Solihull Council's Schools Energy Manager stated that:

"Smart meters have had a huge impact on how we measure, monitor and record consumption, cost, and CO_2 emissions in our schools. We're helping schools to use smart meters to their full potential, to identify high consumption and eliminate waste."

Elaborating on benefits of smart meters:

"There are various benefits of smart meters, these include using the true consumption for billing purposes, instead of estimated readings. This means bills are accurate and schools can see more clearly how they are using energy and take steps to minimise waste where possible."

The case studies below provide further details on how smart meters have benefited a range of

Reported Smart Meter Benefits
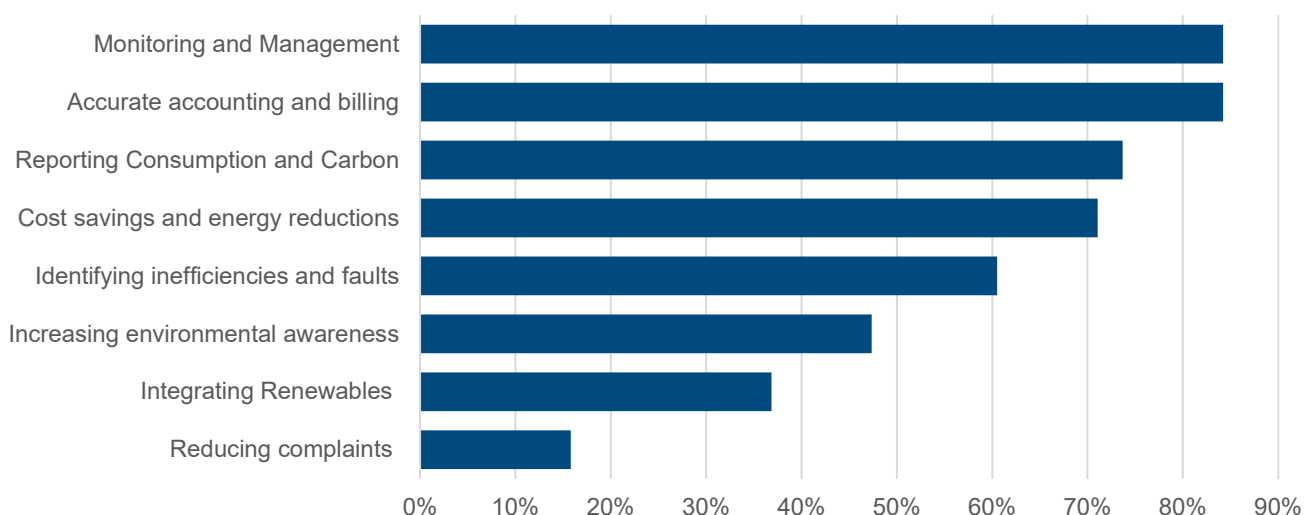
public sector organisations.

DATA VISIBILITY DRIVES SAVINGS

December 2019

Actual school data

	Monday	Tuesday	Wednesday	Thursday	Friday

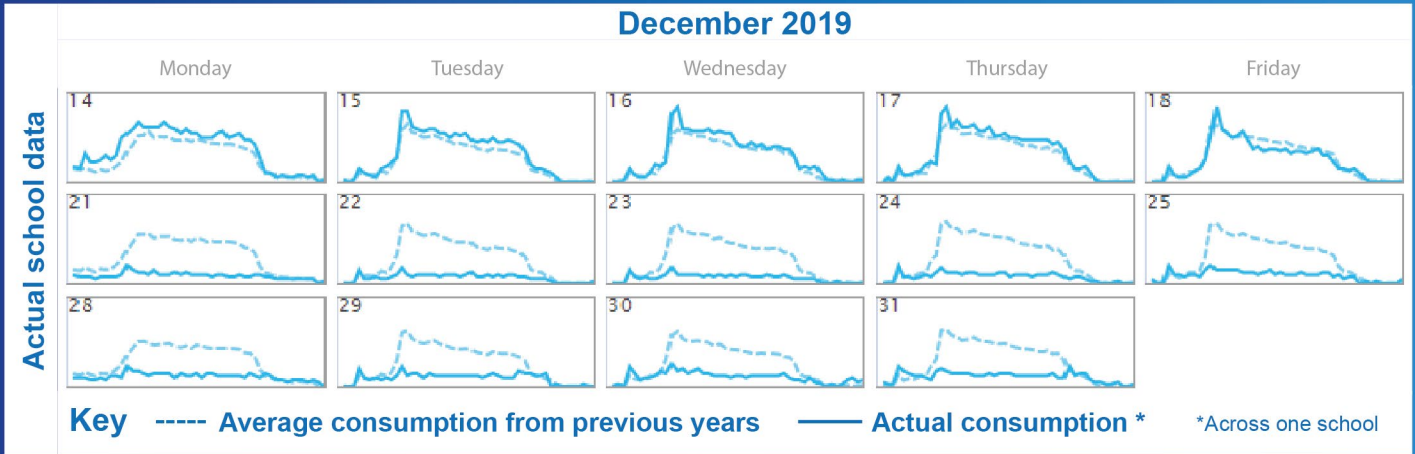**Key** ----- **Average consumption from previous years** —— **Actual consumption *** **Across one school*

BEDFORD BOROUGH COUNCIL

90 schools with smart meters

Data from smart meters was critical to identify how and where schools could reduce energy consumption and save on their bills.

Bedford Borough Council used smart meter data in their schools' newsletter to remind them to turn off their heating and lighting during the Christmas holiday and make potential savings.

The graph above is an example from one school demonstrating savings from average consumption from previous years to actual usage in 2019.

DATA COMPARISON

Smart metering enabled access to **historical data**, fundamental in identifying excess consumption.

⚡ 10x ↑

West Berkshire Council was able to pull together **historic comparisons** for a primary school. Smart meter data showed a 10-fold increase in consumption compared with the previous year, which was investigated and resolved.

West Berkshire COUNCIL

Historical trends help challenge irregularities

BENEFITS OF HH DATA

Impact of a faulty boiler

Half hourly (HH) data from smart meters showed a spike in electricity consumption which was then traced back to faulty gas boilers and thus electrical boilers were compensating. HH data helped quantify how much electricity was used.

Benefits from solar project

HH data was used to understand the impact solar energy had on electricity from the grid.

— **- 2020** ■ **- 2021**

ENDING ESTIMATED BILLING

Month 1 **Month 2** **Month 3**

Key — Billed — Actual consumption

kWh
£
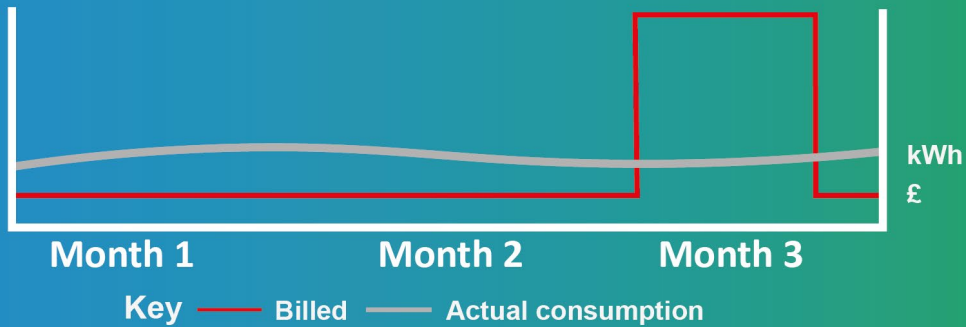
Graph shown is for illustration purposes only

SMART METERS

Schools with traditional metering would often receive infrequent bills making it difficult to **budget and monitor**. A Coventry school, with traditional metering, received only standing charges for two months, with full consumption billed on the third month.

Smart meters have provided Coventry City Council with accurate billing that has helped them with budgeting, including with schools. The benefit of automated meter readings has saved the Council on **resource time** and enabled them to focus on other priorities.

One of the largest housing associations in the North of England, managing over **36,000 homes.**

VISUALISATION

Together Housing use smart meter data to measure the success of **projects** such as LED lighting upgrades and solar arrays.

Data is gathered from communal meters and put onto a common platform where it can be visualised and tracked.

DATA INSIGHTS

LED savings - Monthly profile

Year ● 2019 ● 2020 ● 2021

Tracking success

together housing

£ Quantify changes

Smart meter data helps to identify **variations** in electricity use. This helps with targeted investigations and potential efficiencies.

Half-hourly

Monthly
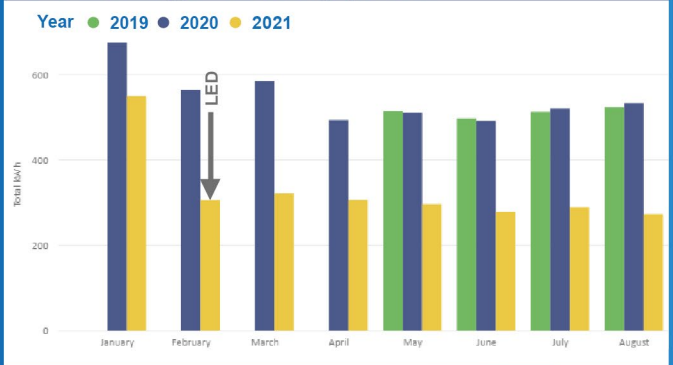
Solar impact - Daily profile

January

April

Department for Energy Security & Net Zero

SOLIHULL
Metropolitan Borough Council

Schools led smart meter education

Smart meters enabling enhanced data visualisation

Energy data used to support pupil learning and engagement

Behaviour change resulting in financial savings

Solihull installed smart meters in all of their schools. The aim was to enable bursars, site, and property managers to monitor and manage energy consumption. Training was provided to teachers and pupils to ensure the benefits of smart meter data were understood and maximised. This was incorporated into classroom learning.

Over a four-year programme, up to 15 schools participated annually in an energy awareness campaign. Pupils actively used smart meter data and actions were taken to reduce consumption and achieve financial savings.

Solihull found that showing data in terms of £'s had a greater impact

KEY TAKEAWYS

£7k
Annual saving from one school

Savings verified by school engagement

Smart meters drove initiatives such as Switch Off Fortnight

Training expanded to inform and empower teachers and pupils

SWITCH OFF FORTNIGHT

Switch Off Fortnight allowed pupils to drive actions, which reduced energy use. Smart meter data for the first week was used as a baseline and a key motivator!

Activities included switching off all unused electrical items according to a traffic light system.
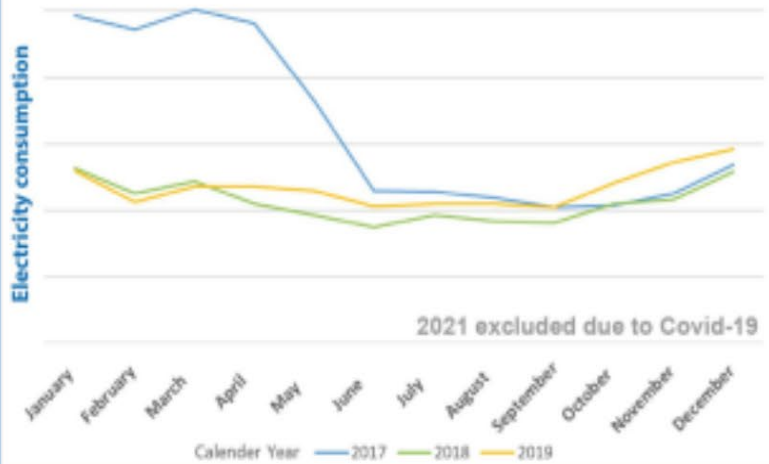
Solihull METROPOLITAN BOROUGH COUNCIL

BEDFORD
BOROUGH COUNCIL

Tracking benefits - LED upgrades

Smart meters enabled accurate quantification of project benefits. Historical smart meter data provided a baseline for energy consumption at Lurke Street multi-storey car park.

LED upgrades in June 2017 showed an average annual saving of 50% (£15,000 per year) in 2018 and 2019.

Lurke Street, multi-storey car park

Electricity consumption

2021 excluded due to Covid-19

January February March April May June July August September October November December

Calender Year —— 2017 —— 2018 —— 2019

Bedford Borough Council meters are
renewable ready

With the smart meters implemented, the bi-directional consumption features enabled measurement of 8 installed solar arrays, 3 of which are in schools.

SOLAR

MEASURED
BENEFITS

BEDFORD
BOROUGH COUNCIL

43%
Target met,
2016

Total carbon
reduction identified,
2009/10 baseline

£30k
Total saving
2018 - 2019

Lurke Street
multi-storey car park
savings
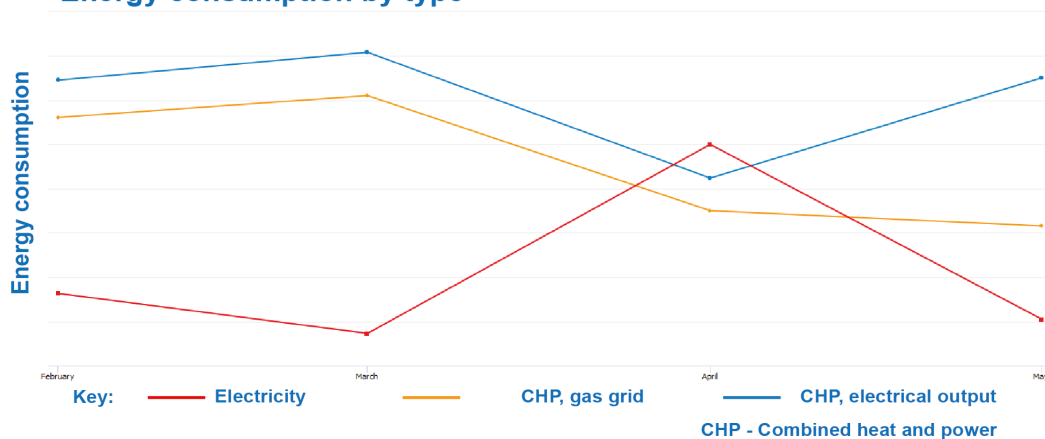
CROYDON HEALTH SERVICES NHS Trust

Accurate Billing

Future forecasting

Monitoring consumption

Energy consumption by type

Energy consumption

February   March   April   May

Key: ——— Electricity   ——— CHP, gas grid   ——— CHP, electrical output

CHP - Combined heat and power

PLAN AND BUDGET

Croydon Health Services NHS Trust uses a common data platform to collate all smart meter data. Using this, the Trust can now plan, budget, and forecast effectively; in the past with estimated billing, this was not the case. For example, in April 2021, CHP gas consumption decreased, whilst electricity consumption increased to compensate. Because of their smart meter data, they were able to forecast and act accordingly.

SUBMETERING

Submeters have been installed in tenanted and retail spaces so that actual usage can be billed.

Having regular smart meter data made it much easier to budget and analyse

Going Forward

As the case studies in this guide demonstrate, public sector organisations are realising benefits from installing smart meters and acting upon the data insights to drive energy reductions, make cost savings and to support energy reporting. Smart meter data has also helped public sector organisations to identify inefficiencies and equipment faults and to increase environmental awareness.

In future, organisations may also benefit from new tariffs, like time of use, which are designed to incentivise them to use more energy at off-peak times, to balance demand. These tariffs charge cheaper rates at certain times of night or day when demand is at its lowest. Innovative new products and services are also appearing on the market that will further support organisations in their understanding and management of energy usage and in developing energy efficiency plans.

To benefit from smart meters and support your organisation's transition to net zero, contact your energy supplier, framework provider or third-party intermediary to discuss your next step.

More Information

- **NDSEMIC:** The Non-Domestic Smart Energy Management Innovation Competition (NDSEMIC) focused on schools, as well as two other priority sectors. The £8.8 million competition funded the piloting of several innovative energy management tools that use smart meter data to help smaller organisations manage their energy use.

- The school-specific tools aimed to help change schools' energy use behaviour to become more efficient, reduce their energy use and save on energy bills. Alongside the ability to monitor energy use, the three school-specific tools included learning materials, such as lesson plans, which aimed to educate pupils and teachers about energy use and climate change. https://www.gov.uk/government/publications/non-domestic-smart-energy-management-innovation-competition

- **Public Sector Decarbonisation Scheme (PSDS):** the PSDS provides grant funding to help public sector bodies take a "whole building" approach to heat decarbonisation. These measures should be 'bundled' with energy efficiency measures. Applicants are encouraged to include measures that help them manage their ongoing energy consumption through smart metering. https://www.gov.uk/government/collections/public-sector-decarbonisation-scheme

- **Public Sector Decarbonisation Guidance:** The Department for Energy Security and Net Zero and the Government Property Function has commissioned Energy Systems Catapult to produce the decarbonisation guidance to help public sector bodies and their decarbonisation partners understand the best route to Net Zero. It provides guidance on heat decarbonisation and energy management. For more information, visit https://es.catapult.org.uk/tools-and-labs/public-sector-decarbonisation-guidance/

- **Local Net Zero Hubs:** there are five local Net Zero Hubs across England, funded by the Department for Energy Security and Net Zero. Each Hub has an operations team of energy experts that provides Local Enterprise Partnerships, local authorities, and other local organisations with practical support to develop local energy projects. You can reach out to your regional Hub for advice and guidance. https://www.apse.org.uk/apse/index.cfm/local-authority-energy-collaboration/beis-local-energy-team/

- Ofgem's Smart Metering Licence Guide
https://www.ofgem.gov.uk/sites/default/files/docs/2019/02/licence_guide_smart_metering_0.pdf

Contacts

Please contact smartmetering@beis.gov.uk for any questions, using the subject line: Public Sector Smart Meter Guide.

This guide was created in partnership with Carbon Architecture Ltd. who deliver real world practical solutions that help drive down energy, cost, and carbon.

This publication is available from: www.gov.uk/government/publications/smart-meters-in-the-public-sector.

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