Department for Energy Security & Net Zero

Smart Metering Implementation Programme

Costs and Benefits Report

Parliamentary Report - 2025

Contents

Overview

Smart meters are replacing analogue gas and electricity meters as part of a national infrastructure upgrade. They enable accurate billing by automatically recording consumers' energy use in every half-hour period, allowing suppliers to bill based on consumers' actual rather than estimated usage, as well as ending the need for manual meter reads or estimated bills. They are helping households to manage their energy use so that they can improve their efficiency and save money on their bills. Smart meters are also a vital part of achieving the Government's mission to build a flexible and decarbonised power system by 2030. A more flexible energy system will enable us to scale up the use of renewables and reduce our reliance on imported fossil fuels, giving us greater control of our energy security.

The successful delivery of smart metering benefits depends upon coordinated effort from a wide range of organisations. The rollout is led by the Smart Metering Implementation Programme (SMIP) within the Department for Energy Security and Net Zero (DESNZ), regulated by the Office of Gas and Electricity Markets (Ofgem), and delivered by energy companies. The Department's role includes developing smart metering policy and regulation, providing the right planning framework for energy suppliers and network operators, and ensuring that benefits are delivered to consumers and all users of the system. Ofgem are responsible for the regulation (including monitoring, reporting and enforcement) of the licence obligations placed on energy suppliers and network operators to deliver smart meters.

Smart metering implementation has been Government policy since 2011 when the Government first required energy suppliers in England, Scotland and Wales to provide smart meters to their customers. As of the end of March 2025, there were 39 million smart meters in domestic and non-domestic premises across Great Britain; over two-thirds of all meters.

A four-year 'Targets Framework' was introduced on 1 January 2022 and sets individual minimum annual smart meter installation targets for energy suppliers. DESNZ is considering the appropriate policy mechanism to further drive the smart meter rollout after the completion of the current framework.

In 2023, the rollout was the subject of reviews by the National Audit Office and Public Accounts Committee (PAC). The Department agreed with the NAO's recommendation to update Parliament annually on the costs and benefits of the rollout; this is the second in a set of planned annual publications that will report on the costs and benefits realised by the smart meter rollout to date.[1]

[1] https://data.parliament.uk/DepositedPapers/Files/DEP2024-0717/Smart_Metering_2024_Costs_and_Benefits_Report_AMENDED.pdf

Programme update

The costs and benefits of the Smart Metering Implementation Programme (SMIP) have been reviewed regularly since the programme began, with the most recent CBA being published in 2019. This CBA aimed to quantify all the costs incurred and benefits to the whole of society that will be realised due to the initial rollout of smart meters in Great Britain. Table 1 shows the Cost and Benefit areas identified in the 2019 CBA.

Table 1: Costs and Benefits areas of the 2019 CBA.

Costs/Benefits	Explanation
In-premises costs	All costs relating to the installation and ongoing operation of smart meters, including meter asset and communications hub costs as well as the costs of installation visits.
DCC costs	Costs relating to the core smart metering offer that the DCC (Data Communications Company) is required to provide, which ensures the secure transmission of smart meter data and messages.
Energy suppliers' and others' IT system costs	IT capital and operating costs experienced by suppliers and other stakeholders relating to the rollout of smart meters.
Other costs	A group of costs including energy consumption of the smart meters and Smart Energy GB costs. Smart Energy GB is the independent, non-profit organisation that campaigns to help households and small businesses to understand and realise the benefits of smart meters.
Projected future costs	In the 2019 CBA three future projects were included here: (1) Enduring Change of Supplier Programme (now in DCC costs); (2) SEGB costs post-2019 (now in "Other" costs); (3) a contingency cost for Alt HAN.[2]
Customer benefits	The majority of customer benefits are derived from the reduction in consumer energy use enabled by smart meters, with benefits from time savings (due to no longer needing to submit readings or topping up remotely) also included.
Supplier benefits	A collection of benefits that suppliers will realise due to the rollout of smart meters (e.g. fewer site visits for reading meters).
Demand-shifting benefits	Demand-shifting benefits are seen as smart meters enable incentives for consumers to shift electricity demand away from peak time towards off-peak or towards periods when cheap, low-carbon generation is available.
Network benefits	Network benefits are realised due to data from smart meters, allowing Distribution Network Operators (DNOs) to identify faults in

[2] Alt HAN programme delivers a technical solution to properties where smart meters and the In-Home Display (IHD) are too far apart from each other to communicate using standard smart metering equipment.

	the network, restore electricity supply more quickly when outages occur and take better informed investment decisions.
Carbon and air quality benefits	Benefits of avoided carbon emissions and improved air quality due to reduced energy consumption.

The Programme monitors both costs and benefits of the smart metering rollout on an ongoing basis. Through this ongoing work to maximise benefits from the rollout, evidence on new costs and benefits that were not anticipated at the time of the 2019 CBA is now available. Their impact is not quantified in this report, however DESNZ will continue to gather evidence that may support further analysis in future.

Examples of some of the costs and benefit changes seen since 2019 include:

- The COVID-19 pandemic introduced several new costs around installation visits for energy suppliers, for example the requirement to provide smart meter installers with appropriate personal protective equipment. While this will have increased installation costs, particularly in the period 2020 to 2021, this was partly offset by lower installation volumes (as installation activity was impacted by social distancing requirements).
- In 2022/23 the Energy Bill Support Scheme (EBSS) leveraged smart metering to provide support directly to customers with smart pre-payment meters, resulting in time and efficiency savings benefits compared to the experience of consumers on traditional pre-payment meters. The EBSS gave households in Great Britain £400 towards their electricity bills over winter 2022/23. Prepayment (PPM) households received this either through monthly physical vouchers (traditional meter) or directly credited onto their smart meter each month. Final end of scheme statistics[3] showed that over 12 million payments were made to smart meters in PPM mode, with the proportion of successful payments over 98%.
- Another innovation enabled by smart meters has been the recent winter Demand Flexibility Service (DFS), which encourages consumers to shift their electricity demand outside of specified peak periods, in return for a financial reward. This initiative ran for two winters and was enabled by smart meters being able to send half hourly consumption readings. Across the winters of 2022/23 and 2023/24, 3,300MWh and 3,700 MWh of electricity use was able to be shifted from peak periods respectively. In 2024 the DFS was changed to an all year round scheme, between December 2024 and April 2025, 11,900MWh of shiftable electricity demand has been procured.[4]

[3] https://www.gov.uk/government/publications/energy-bills-support-scheme-payments-made-by-electricity-suppliers-to-customers
[4] https://www.neso.energy/document/354381/download

There is also emerging evidence of potential benefits being realised through innovation building on the smart meter platform. For example:

- The Smart Meter Enabled Thermal Energy Research (SMETER)[5] project has shown how smart meter-enabled in-use performance measurement tools can improve our understanding of the performance of individual homes and the overall housing stock.
- The Smarter Tariffs, Smarter Comparison[6] and Non-Domestic Smarter Tariff Comparison projects have demonstrated how smart meter data can support households and non-domestic consumers respectively in understanding the potential benefits of smart Time of Use tariffs.[7]
- The Smart Meter Energy Data Repository innovation programme has explored the feasibility of facilitating access to smart meter data, maintaining or exceeding the current levels of security and data privacy. Results showed how easier access to smart meter data can unlock additional benefits to consumers, energy suppliers, distribution companies, energy management companies and not-for-profit organisations.
- The Smart Meter Internet of Things innovation programme has investigated how the smart metering system could be used to deliver additional data (other than energy) to enable further benefit.
- Distribution Network Operators are reporting cost savings as a result of the power outage notification functionality enabled by smart meters.
- The Smart Energy Savings Innovation Programme (SENS) has supported the development of innovative smart meter products to support domestic consumers in reducing their energy consumption.[8]

Summary of Costs and Benefits update

Consistent with last year's edition of this update, this publication uses a 'dead-stop' scenario, which uses the programme's 2019 Cost Benefit Analysis (2019 CBA)[9] as the underlying framework but assumes that no further smart meters are installed past the end of 2024, and costs and benefits after that point are only included for meters already installed before the end of 2024. Therefore, accrued costs and benefits are included from smart meters already installed, along with future costs and benefits associated with maintaining those meters to 2034, consistent with the appraisal period used for the 2019 CBA. The "dead-stop" provides an overview of the economic costs and benefits of the rollout to date and is not comparable to the published 2019 CBA which modelled costs and benefits for all meters installed to the end of the rollout.

This "dead-stop" analysis for those smart meters installed before the end of 2024 shows a total Net Present Value (NPV) of £2.2 billion over the appraisal period. This indicates that the

[5] https://www.gov.uk/government/publications/smart-meter-enabled-thermal-efficiency-ratings-smeter-technologies-project-technical-evaluation
[6] https://www.gov.uk/government/publications/smart-meter-enabled-tariffs-comparison-project-smarter-tariffs-smarter-comparisons
[7] https://www.gov.uk/government/publications/non-domestic-smarter-tariff-comparisons-innovation-programme
[8] https://www.gov.uk/government/publications/smart-energy-savings-sens-competition-evaluation
[9] https://www.gov.uk/government/publications/smart-meter-roll-out-cost-benefit-analysis-2019

Programme would achieve higher benefits than costs, even if no further meters were installed after the end of 2024. The installation of additional meters in 2024 has driven an increased net benefit when compared to last year's report. It is important to note that only a proportion of the total costs and benefits included in the "dead-stop" calculation have been realised to end 2024, with the remainder being incurred over the rest of the appraisal period.

The underlying cost and benefit areas making up the "dead-stop" NPV are shown in Table 2 below, including a comparison to costs and benefits estimated under the 2023 dead-stop for last year's report to demonstrate the additional net benefit accruing from meters installed in 2024.

In this analysis we report using 2011 prices, discounted to 2019, to maintain consistency with the last full cost benefit assessment of the smart meter roll-out. When 2024 prices, discounted to 2025, are used the Programme NPV to the end of 2024 would be £3.7 billion, up from £3.0 billion at the end of 2023. A full breakdown of costs and benefits on this basis is provided in Annex B.

Table 2: Summary of Cost and Benefits of the Smart Metering Programme – 2023 dead-stop vs 2024 dead-stop (£ billions, 2011 prices, discounted to 2019)

Costs/Benefits	2023 dead-stop	2024 dead-stop
Total Costs	**11.8**	**12.1**
In-premises costs	5.2	5.3
DCC costs	4.1	4.1
Energy suppliers' and others' IT system costs	1.1	1.1
Other costs	1.4	1.5
Total Benefits	**13.6**	**14.3**
Customer benefits	5.4	5.6
Supplier benefits	4.5	4.7
Demand-shifting benefits	0.9	0.9
Network benefits[11]	*	0.1
Carbon and air quality benefits	2.9	2.9
Net Present Value (Benefits minus Costs)	**1.8**	**2.2**

Updates to cost-benefit analysis

To estimate the additional benefit accruing from smart meters rolled out in 2024, the programme has updated the cost-benefit analysis model used for last year's report. The dead-stop methodology has been replicated, with rollout progress extended to the end of 2024. To ensure this reporting continues to provide the most accurate possible view of the costs and benefits of the smart meter roll-out to date, the programme will review further opportunities to use observed data in place of model assumptions ahead of reporting on the roll-out to end 2025.

As with the previous year's report, we have maintained a distinction between the original rollout and the technological upgrade from 2G/3G networks to 4G by the end of 2033 by excluding costs related to this transition. We have treated costs and benefits consistently by reducing benefits for 2034 to reflect the switch-off of 2G/3G networks.

Rollout

The model includes the number of smart meters in operation in Great Britain, as well as the number of meters operating in smart/traditional mode. The programme collects statistics from suppliers on the number of meters operating by type and the number of smart meters installed.[10] We have added updated figures in the model capturing progress to the end of 2024.

GDP deflator

The GDP deflator used to place estimates of costs and benefits in the model into 2011 price terms, for consistency with the 2019 Smart Meters Cost-Benefit Analysis and last year's publication of this report, has been updated with the latest HM Treasury figures.[11]

Marginal emissions factors

The model uses marginal emissions factors to estimate the change in carbon emissions resulting from changes in energy consumption as a result of smart meter usage. The emissions factors utilised in the model have been updated with the latest Green Book supplementary guidance.[12]

In-premise costs

The model includes the costs of visiting consumer properties to install smart metering equipment as well as the costs of the smart meter assets themselves. The programme gathers data on installation and asset costs from energy suppliers each year. As with last year's report,

[10] https://www.gov.uk/government/collections/smart-meters-statistics
[11] https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-march-2025-spring-statement-quarterly-national-accounts
[12] https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

we have used supplier data to derive market-wide average installation and asset costs and used these for years 2020-2024 in place of the CBA assumptions.

Smart Energy GB (SEGB) costs

Marketing and organisational costs for Smart Energy GB, the independent organisation established to market the benefits of smart metering to GB consumers. We have used updated operational costs to the end of 2024, provided by SEGB via their published budget documents.[13]

DCC costs

Costs for the Smart Data and Communications Company (DCC), operators of the telecommunications network that connects smart meters to energy suppliers, were included in the 2019 CBA. To provide an updated picture of costs, the Department has used bespoke operational cost data provided by the DCC via a similar data request that was issued ahead of last year's report.

Alt HAN costs

Alt HAN is a technological solution that enables smart metering in premises otherwise unable to with standard equipment. Alt HAN Company, the body responsible for overseeing rollout of Alt HAN devices, have again provided the Department with updated operational and installation costs for the purposes of this report.

The CBA model also includes the costs of energy consumed by Alt HAN devices; the Department has used information provided by Alt HAN Company on the rollout of devices to the end of 2024 to update energy consumption costs.

Network benefits

Smart meters provide benefits to Distribution Network Operators (DNOs) by offering additional information about power outages/faults, avoiding site visits and consumer calls to report outages, and allowing DNOs to more effectively target network reinforcement and plan new connections.

In last year's report network benefits were not quantified, as smart coverage was below the 60% threshold where these benefits were assumed to be realised in the CBA. Recent and ongoing evidence collections show that DNOs are starting to see benefits enabled by smart meters. We have therefore included network benefits but have taken a prudent approach to reflect that smart meter coverage is not above the 60% threshold in all DNO regions by scaling benefits in accordance with the proportion of meters that are in DNO areas operating above the threshold.

[13] https://www.smartenergygb.org/about-us/essential-documents

Annex A: Evidence Sources

Table 1: Monitoring evidence for cost and benefit areas

Area of Costs/Benefits	Monitoring evidence
In-premises costs	Annual data collection and ongoing bilaterial engagement with energy suppliers.
DCC costs	Bespoke data collection, based on annual price control data provided to Ofgem.
Energy suppliers' and others' IT system costs	Largely upfront costs pre-2019 and therefore no additional monitoring.
Other costs	Annual Smart Energy GB budgets and regular monitoring of Alt HAN rollout costs.
Projected future costs	Bespoke data request to the DCC (for Enduring Change of Supplier programme), annual SEGB budgets (SEGB post 2019 costs) and regular monitoring of Alt HAN rollout costs.
Customer benefits	Standalone evaluations of energy usage impacts, alongside regular (monthly) monitoring of customer contacts and complaints through various channels.
Supplier costs and benefits	Annual data collections from energy suppliers, with bilateral engagement with suppliers.
Demand-shifting benefits	Regular, quarterly reporting from energy suppliers on time of use tariffs.
Network benefits	Regular bilaterals with DNOs, with supporting structured data collection on benefits progress.
Carbon and air quality benefits	Underlying assumptions are determined by government appraisal guidance.

Annex B: NPV in 2024 prices, discounted to 2025

In this analysis we primarily report using 2011 prices, discounted to 2019, to maintain consistency with the last full cost benefit assessment of the smart meter roll-out. When 2024 prices, discounted to 2025, are used the Programme NPV to the end of 2024 would be £3.7 billion, up from £3.0 billion at the end of 2023. The full breakdown of costs and benefits on this basis is shown below.

Costs/Benefits	2023 dead-stop	2024 dead-stop
Total Costs	**20.2**	**20.8**
In-premises costs	9.0	9.2
DCC costs	6.9	7.1
Energy suppliers' and others' IT system costs	1.9	1.9
Other costs	2.4	2.6
Total Benefits	**23.3**	**24.5**
Customer benefits	9.2	9.7
Supplier benefits	7.6	8.0
Demand-shifting benefits	1.5	1.6
Network benefits	0.0	0.2
Carbon and air quality benefits	4.9	4.9
Net Present Value (Benefits minus Costs)	**3.0**	**3.7**