

Going for broke: How British households will pay for the data centre boom

The cost of data centre growth to British households 2026 to 2035

global action plan

November 2026

Foreword

The anticipated data centre boom will require staggering amounts of additional grid electricity, with a price tag to match. The government's Data Centre Covenant asks data centres to pay their fair share so households do not pick up the bill. But as this report explores, large scale data centre expansion will inevitably increase energy bills for consumers.

> The climate implications are stark, but this report shows that households, too, will suffer. Data centres look set to drive up household energy bills, peaking in 2030. This could tip 77,000 more households into fuel poverty. Those on the most expensive electric heating will pay most and, as ever, the poorest households will take a disproportionate hit.

In an era when political focus is on reducing bills for the most vulnerable, this should cause immediate pause for thought.

Instead, Government has been overruling local democracy when councils have rejected planning permission for data centres, and new planning rules give Ministers further decision-making powers with a "presumption of consent".

For these reasons and many more, communities are resisting large scale data centres wherever they are proposed. This report gives further reason to call – as they and we do - for a moratorium on large scale data centres until we have the answers to basic questions about how much compute we need and for what, and how data centres can be accommodated without worsening our climate and the cost of living crises.

Larissa Lockwood

Director of Campaigns and Community Action

Executive summary

- **Data-centre growth could push up to 77,000 more households in England, Wales and Scotland into fuel poverty.** This peaks at around 2030, on the high path for data centre demand, counting households that would spend more than a tenth of their income, after housing costs, on energy. A fuel-poor household in England would pay **up to £19 a year more, or £27 if it heats with electricity.**

- **Data-centre growth could add up to £88 to the average household's electricity bills over the ten years 2026 to 2035, or up to £2.6 billion across Great Britain.** This estimate is based on the fastest-growth scenario published by the National Energy System Operator, the publicly owned body that runs Britain's grid, which assumes 36 TWh of data centre use by 2035, against 4.6 TWh in 2025. It is implied by the new Data Centre Covenant, which insists the UK will need 6 GW of AI data-centre capacity by 2030. On NESO's central outlook, 22 TWh by 2035 against 4.6 TWh in 2025,[1] the cost is about £8 to £28, or £0.2 billion to £0.8 billion, peaking at £3 to £5 a year around 2030.

- **The burden is regressive, with poorer households paying proportionately more for additional data centre capacity.** In pounds, the richest tenth of households pays somewhat more, because it uses about 45% more electricity than the poorest. But as a share of spending the poorest tenth pays about two and a quarter times as much as the richest. Households that heat with electricity pay a third more than average.

- **Data centres already cost households money.** The data centres operating between 2021 and 2025 raised wholesale prices by enough to add about £21 to the average household's bills over those five years, £574 million in all. This has been reduced by the Energy Price Guarantee (to around £469m) and then by environmental levies data centre operators have paid, bringing the household bill down to around £100m over those five years.

- **Inflation effects are small at home and larger from abroad.** Data-centre growth adds about 0.01% to 0.02% to the consumer price level. The global race to build AI capacity lies outside this report's model, but the Bank of England expects AI-related demand for chips and IT equipment to add a little over 0.1 percentage points to UK inflation in 2026 alone.[2]

- **Much of the cost of the data centre build out is carried off households by levies and charges.** Pressure from the industry to remove these can only risk more significant increases in household bills, which is the danger of the governments proposed new AI Growth Zones.

This report builds an hour-by-hour model of the British electricity system, runs it with and without data-centre growth, and traces the difference through every route by which it reaches a household bill: wholesale prices, renewable levies, the Capacity Market, and the costs of the transmission and distribution networks, using published sources for the inputs. The figures for fuel poverty and household burdens are based on a microsimulation modelling of UK households. The technical annex sets out the method for the electricity market in full.

1 National Energy System Operator (NESO), Ten Year Outlook 2026 (data centre demand 4.603 TWh in 2025 and 22.0 TWh in 2035; connected capacity 2.019 GW in 2025 and 8.4 GW in 2035).

2 Bank of England, Monetary Policy Report, July 2026, Box D: AI-related demand "is expected … to add a little over 0.1 percentage points to UK consumer price inflation by the end of the year".

1. Introduction

Public concern over the rush to construct data centres is growing, focused on the exceptional resource demands of modern "hyperscale" data centres that the AI buildout rests on. Reports from the US have already indicated notable rises in prices in regional electricity markets. In the "data centre corridor" around Virginia, where 13% of the world's data centre capacity is located,[3] data centres raised the cost of buying reserve capacity for 2025/26 by $9.3 billion, almost two-thirds of the total, according to its market monitor, which Maryland's consumer advocate says has added about $16 to $21 a month to most of that state's household bills. But as the buildout gathers pace globally, European markets are amongst those affected. Research commissioned by Friends of the Earth Ireland and Beyond Fossil Fuels in mid-2026 estimated that data centres had added about €360 to the electricity costs of the average Irish household between 2015 and 2023, through wholesale prices alone.[4]

Ireland is a dramatic case, with data centres taking 23% of Ireland's total electricity supply.[5] Britain's data centres, by comparison, currently use about 2% of its grid electricity.[6] But the British pipeline for new constructions is substantial. Connection requests from data centres reached at least 80 GW by mid-2026, substantially more than the country's entire winter peak demand,[7,8] and the government has made the expansion of computing capacity a national priority.[9] The Treasury's Data Centre Covenant, published with the Budget in October 2026, estimates that the country will need 6 GW of AI data-centre capacity by 2030.[10] Understanding how this radical new demand for electricity will impact on the country's electricity system, and then on to households, is a pressing concern.

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But Britain's privatised and fragmented electricity market makes these questions harder to answer than in Ireland and elsewhere. There is no single "pool" for power: most power is traded in private contracts, with day-ahead auctions setting the reference price; many generators are paid under fixed-price contracts; and a household bill is assembled from a dozen separate charges, each with its own rules. A rise in demand moves several of these at once, some up and some down. This report is built around a simulation model of the UK electricity system in an attempt to understand how all those moving parts eventually land on households.

3 Joint Legislative Audit and Review Commission, "Data Centers in Virginia", Report to the Governor and the General Assembly of Virginia, 9 December 2024, summary and p.6: northern Virginia is "the largest data center market in the world, constituting 13 percent of all reported data center operational capacity globally and 25 percent of capacity in the Americas" (citing Cushman & Wakefield). https://jlarc.virginia.gov/pdfs/reports/Rpt598.pdf

4 Seán Fearon (ICTA-UAB, Autonomous University of Barcelona, and CUSP research fellow), "The Cost of Data Centres: Modelling the impact of data centres on electricity bills for Irish households", commissioned by Beyond Fossil Fuels and Friends of the Earth Ireland, May 2026. The estimate is of wholesale electricity costs only. The report estimates that the average Irish household paid about €360 more between 2015 and 2023.

5 Central Statistics Office (Ireland), "Data Centres Metered Electricity Consumption 2025", statistical release, July 2026: "The percentage share of total metered electricity consumption used by data centres rose to 23% in 2025 from 5% in 2015"; consumption rose from 6,973 GWh in 2024 to 7,663 GWh in 2025. https://www.cso.ie/en/releasesandpublications/ep/p-dcmec/datacentresmeteredelectricityconsumption2025/keyfindings/

6 Department for Energy Security and Net Zero (DESNZ), "Energy Trends June 2026, special feature article: data centre electricity consumption in Great Britain, 2020 to 2024", 30 June 2026 (Official Statistics in Development; 239 sites, meter-matched). https://www.gov.uk/government/publications/energy-trends-june-2026-special-feature-article-data-centre-electricity-consumption-in-great-britain-2020-to-2024

7 Ofgem, "Ofgem acts to free up grid capacity by tackling speculative data centre projects", press release, 29 July 2026 ("at least 80GW" of data centre connection requests); the accompanying consultation, "Proposed data centre connection reforms", gives about 73 GW, 14.1 GW of it at distribution. https://www.ofgem.gov.uk/consultation/proposed-data-centre-connection-reforms

8 NESO, Electricity Capacity Report 2026, its Data Workbook and its Methodology and Assumptions Book (delivered to DESNZ 29 May 2026, published 21 July 2026). Underlying peak demand rises 14.3 GW over ten years, including "a significant increase in data centre demand (3.7 GW)" (report p.28); target response to peak demand in Data Workbook Figure A3; targets for later years in Figures A5 to A8. https://emrdeliverybody.nationalenergyso.com/IG/s/article/Electricity-Capacity-Report-ECR

9 House of Commons Library, "Data centres", Research Briefing CBP-10315, 2026 (data centres are not eligible for the British Industrial Competitiveness Scheme; AI Growth Zone price discount to be consulted on). https://researchbriefings.files.parliament.uk/documents/CBP-10315/CBP-10315.pdf

10 HM Treasury, "The Data Centre Covenant", policy paper, 28 October 2026. https://www.gov.uk/government/publications/data-centre-covenant/the-data-centre-covenant

2. Data centres in Britain, now and to 2035

Official statistics now measure data-centre electricity use directly. The Department for Energy Security and Net Zero matched 239 sites to their meters and found consumption rising from 3.2 TWh in 2020 to 4.5 TWh in 2024, about 2% of the electricity drawn from the grid.[11] The system operator, NESO, puts 2025 at 4.6 TWh.[12] That is well below the 7.6 TWh it estimated in November 2025: NESO has since revised down its assumed utilisation of data-centre capacity on better data, and its new figure matches the metered series.[13] However, this figure does not count smaller installations at sites being used for other purposes as well – for example, in a large office.

The report uses three paths to 2035 (Figure 1). The medium path is NESO's own Ten Year Outlook: 22 TWh by 2035, from 8.4 GW of connected capacity used at about 30% of its maximum.[14] That is NESO's measured figure for today's fleet, which includes sites still ramping up; sites on UK Power Networks' system draw about 21% of their capacity on average. New AI sites may run at more of their capacity, although as yet no UK estimate exists.[15] The International Energy Agency notes that demand at a new site does not reach its contracted capacity on connection but ramps up as buildings, servers and customer workloads come online.[16] The low path continues the 2020 to 2024 metered trend of 9% a year, to 11 TWh. The high path, 36 TWh, adds the growth in NESO's fastest 2025 scenario (Electric Engagement) to the measured 2025 base. If NESO's 8.4 GW ran at about half its maximum, demand would reach the high path, which is also close to what NESO forecast a year earlier (33 TWh by 2035); its latest outlook revised that down.[17] None reflects the full connection queue, which NESO does not expect to be built in full: at NESO's utilisation the queue would use at least 190 TWh a year, far beyond any published plan for the power system, so it is not modelled.[18] However, the connection queue is far larger than any of the three paths; if even a fraction of it is built beyond NESO's outlook, the high path becomes the relevant one and this is the path we have assumed will be closest to reality throughout this document.

11 Department for Energy Security and Net Zero (DESNZ), "Energy Trends June 2026, special feature article: data centre electricity consumption in Great Britain, 2020 to 2024", 30 June 2026 (Official Statistics in Development; 239 sites, meter-matched). https://www.gov.uk/government/publications/energy-trends-june-2026-special-feature-article-data-centre-electricity-consumption-in-great-britain-2020-to-2024

12 National Energy System Operator (NESO), Ten Year Outlook 2026 (data centre demand 4.603 TWh in 2025 and 22.0 TWh in 2035; connected capacity 2.019 GW in 2025 and 8.4 GW in 2035).

13 NESO, "Future Energy Scenarios 2025: Pathways to Net Zero", July 2025 (version 5, 21 November 2025), p.110: data centre demand "estimated at 7.6 TWh from the 2.4 GW connected facilities". NESO, Electricity Capacity Report 2026, p.28: the lower forecast "reflects improved knowledge and data availability, including on data centre utilisation, where our assumed figure was revised down significantly". https://www.neso.energy/document/364541/download

14 National Energy System Operator (NESO), Ten Year Outlook 2026 (data centre demand 4.603 TWh in 2025 and 22.0 TWh in 2035; connected capacity 2.019 GW in 2025 and 8.4 GW in 2035).

15 UK Power Networks, Open Data Portal, "Data centre demand profiles" (half-hourly import for 96 data centre sites against their maximum import capacity): mean 21%. Panel of Technical Experts, "Report on the NESO Electricity Capacity Report 2026", recommendation 109, on separating build-out from utilisation uncertainty.

16 International Energy Agency, "Powering Artificial Intelligence: Strategies for integrating data centres into electricity systems", report prepared at the request of France's G7 Presidency, 2026, p.18.

17 NESO, "Future Energy Scenarios 2025: Pathways to Net Zero", July 2025 (version 5, 21 November 2025), data workbook: data centre demand of 33.2 TWh in 2035 in the Ten Year Forecast. The full-queue figure is the author's arithmetic on the consultation's 73 GW: 73 GW × 8,760 hours × 30%. https://www.neso.energy/document/364541/download

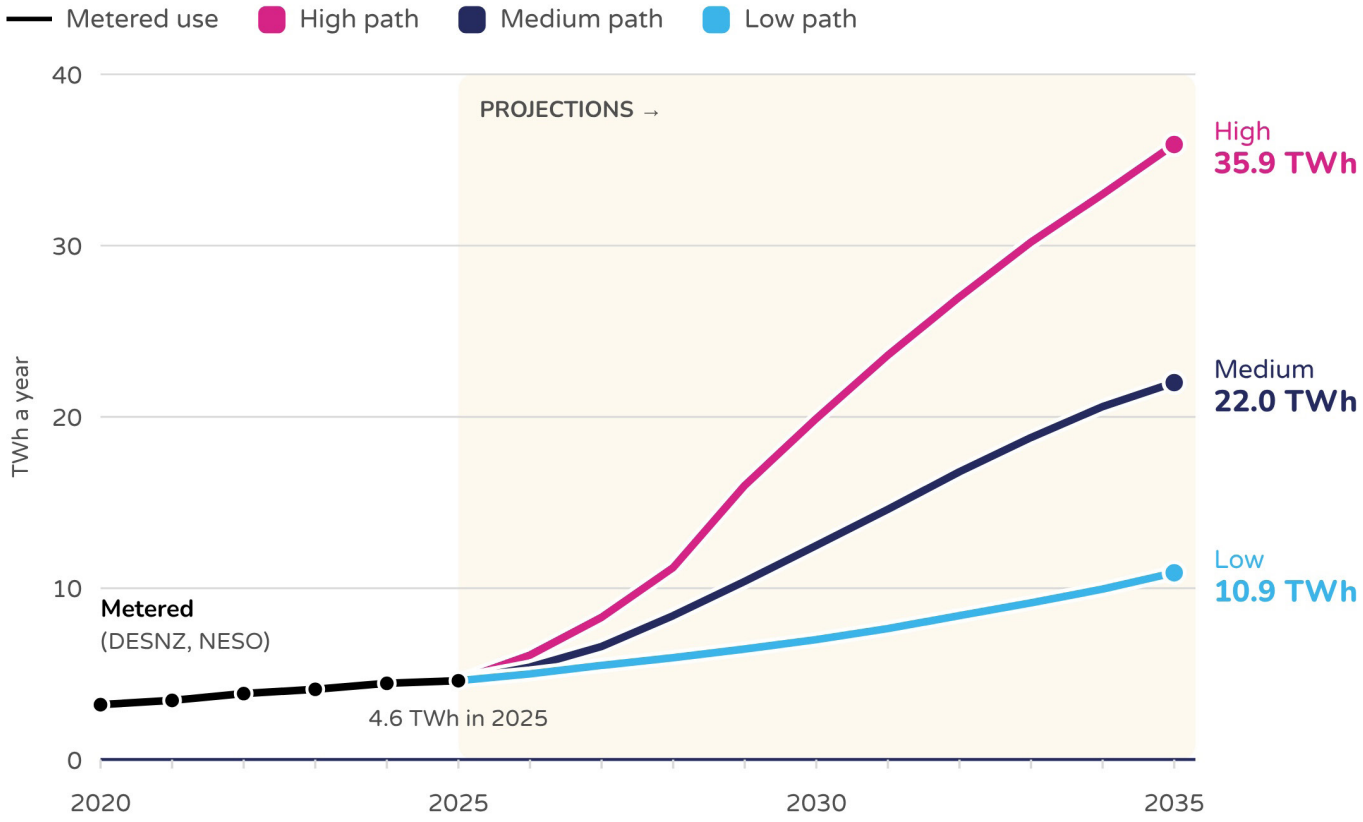
18 NESO, written evidence to the Environmental Audit Committee inquiry on data centres, DCU0081, 2026. https://committees.parliament.uk/writtenevidence/166090/html/

Many developers are applying for connections for data centres that are unlikely ever to be built: demand connection requests rose from 41 GW to 125 GW in seven months, mostly from data centres. Ofgem has proposed that data-centre developers pay a refundable commitment fee of £237,500 to £712,500 per megawatt, forfeited if a project leaves the queue early, to discourage speculative applications from clogging it.[19] The International Energy Agency lists Great Britain among the places where data-centre connection queues exceed today's peak demand, and notes that such queues contain duplicative or speculative projects.[20]

FIGURE 1

Data-centre electricity use in Great Britain, three paths to 2035

TWh a year, metered 2020 to 2025 and projected 2026 to 2035.



Sources: DESNZ (2020 to 2024, metered); NESO Ten Year Outlook 2026 (2025 and Medium path); author's Low and High paths (Annex A2).

The report measures the cost of growth above the 2025 level. Where useful it also shows the cost of the whole fleet, which includes the data centres already running as well as those expected to be added.

19 Ofgem, "Ofgem acts to free up grid capacity by tackling speculative data centre projects", press release, 29 July 2026 (demand connection applications rose from 41 GW to 125 GW between November 2024 and June 2025; proposed Data Centre Commitment Fee of £237,500 to £712,500 per MW, refunded at energisation and forfeited on early exit; proposals out for consultation). https://www.ofgem.gov.uk/press-release/ofgem-acts-free-grid-capacity-tackling-speculative-data-centre-projects

20 International Energy Agency, "Powering Artificial Intelligence: Strategies for integrating data centres into electricity systems", report prepared at the request of France's G7 Presidency, 2026, pp.7 and 17.

3. How data centre demand reaches a household energy bill

A data centre draws power around the clock. That extra demand reaches household bills by six routes (Table 1). Two raise bills; three can lower them; one is small.

TABLE 1

The routes from data-centre demand to household bills

Route	What happens	Impact on household bills
Wholesale price	More demand brings dearer power stations into use more often, and fewer hours of cheap surplus wind	▲ Up
Renewable levies	Subsidy costs are charged per unit of electricity, and data centres pay them too, so a largely fixed bill is spread over more units. Higher wholesale prices also cut the top-ups owed to wind farms on fixed-price contracts	▼ Down
Capacity Market	The system operator buys enough firm capacity to meet the winter peak. A bigger peak means buying more, at a higher price	▲ Up
Distribution network	Local substations and cables reinforced for new connections; the cost below a cap is shared by all users	▲ Up, small
Transmission network	Most transmission charges are a fixed national pot shared by use, so new users take a share. New works for data centres add to the pot	▼ Down, unless wider reinforcement is very large
Balancing	The cost of balancing the system is charged per unit of demand, so data centres take a share. Whether they change the total cost depends on where they are built	▼ Down if the total is unchanged

Most of the network companies' distribution revenue is also a fixed sum shared out by use, so a data centre on the local network takes a share of that too. Sharing fixed sums lowers household bills only if the sums stay fixed; Section 8 shows the totals both ways.

4. The past five years

The model was run over 2021 to 2025 with and without the data centres actually operating, using observed fuel prices, weather and power stations.[21] The data centres in place over those five years raised wholesale prices by enough to add £20.70 per household to bills, or £574 million in all. Because the Energy Price Guarantee capped bills in 2022 and 2023, about £16.90 (£469 million) reached households directly. Levies then reduced the total impact further, to around £100m in total or about £3.60 a household.

Most of that cost comes from data centres that already existed in 2020. The growth since then, about 1.4 TWh, accounts for about £4.40 per household (£122 million). The cost was concentrated in 2022, when gas prices made every extra unit of demand expensive.

5. The next ten years: prices and levies

On the high path, data-centre growth raises the wholesale price that households pay for by enough to cost about **£130 per household** over 2026 to 2035. The cost peaks at about £20 a year in 2030 and is still about £18 a year by 2035. It depends most on three things:

- **Gas prices: £104 to £175 across the government's low and high gas cases.**
- **New generation built to meet the extra demand: £122 to £213.**
- **Interconnectors: Britain is expected to be a net exporter in the 2030s, so extra demand partly displaces exports. The cost is £120 with the most interconnection NESO considers and £142 with only the cables already built or financed.**

On the medium path the cost is a little over half as large: about **£71 per household** over the decade, rising steadily to about £10 a year by 2035. The same three factors move it: gas prices (£56 to £95), new generation (£67 to £116) and interconnectors (£65 to £77). On both paths household use rises from 3.6 MWh in 2026 to 4.2 MWh in 2035 as heat pumps and electric cars spread, and the cost per household rises with it.[22]

21 The model code, inputs and outputs are held in the project repository and are available from the author.

22 DESNZ, "Fossil fuel price assumptions 2025". https://www.gov.uk/government/publications/fossil-fuel-price-assumptions-2025

> Almost all of the wholesale price rise s offset through the levies. The subsidy schemes for low-carbon power (the Renewables Obligation, Feed-in Tariffs, Contracts for Difference and, from 2026, the Sizewell C levy) are paid for per unit of electricity, and data centres pay them like any other business.[23] Their cost is largely fixed, so data centres take a share of it: by 2035 data centres pay about £1.1 billion a year in these levies. That accounts for £65 of the £72 per household offset. Payments under the Renewables Obligation and Feed-in Tariffs run down over the next decade as generators reach the end of their support, so this part of the offset will shrink in the 2030s (Annex A6). The other £7 is lower top-ups to wind and solar farms on Contracts for Difference: when wholesale prices rise, the gap to their fixed price narrows. It is small because extra demand raises prices least in windy hours, when those farms are producing.[24] The net effect through prices and levies is about **–£1** per household.[25]

The International Energy Agency reaches the same conclusion in general terms: a data centre that pays its share "can spread fixed costs over more consumption and ease pressure on bills".[26,27] The government's Data Centre Covenant makes the same case: new data-centre demand "may help spread the energy system's fixed costs across more users". Through the levies, this report finds that it does.[28] From April 2027 the British Industrial Competitiveness Scheme exempts eligible manufacturers from the Renewables Obligation and Feed-in Tariff levies, though not the CfD levy, narrowing the base they are spread over; data centres are not eligible.[29]

Two things could change that. The government has proposed a discount on electricity prices for data centres in AI Growth Zones from April 2027, to be consulted on and intended to match its savings on constraint payments.[30] Its size and design are not decided; reported discounts are £14 to £24 per megawatt-hour. If other consumers bore a discount of that size for *every* growth data centre, it would add up to £51 per household on the high path.

And if more wind is on Contracts for Difference by 2028 than the operator of those contracts forecasts, as one academic analysis suggests, the offset would be larger and the net lower, by about £14 if volumes were a quarter higher.[31]

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23 House of Commons Library, "Data centres", Research Briefing CBP-10315, 2026 (data centres are not eligible for the British Industrial Competitiveness Scheme; AI Growth Zone price discount to be consulted on). https://researchbriefings.files.parliament.uk/documents/CBP-10315/CBP-10315.pdf

24 Low Carbon Contracts Company, data portal: CfD generation, contract register and forecast generation (August 2026). https://dp.lowcarboncontracts.uk

25 For the structure of policy costs in British bills, see Ana Camacho McCluskey, William Blyth, Robert Gross and Richard Carmichael, "The Price of Power: Wholesale market price formation, policy costs and domestic electricity bills in Britain", UK Energy Research Centre discussion paper, November 2025. That paper does not address how new demand shares the levies; the –£1 is this report's estimate.

26 International Energy Agency, "Powering Artificial Intelligence: Strategies for integrating data centres into electricity systems", report prepared at the request of France's G7 Presidency, 2026, p.10.

27 DESNZ, "British Industrial Competitiveness Scheme: guidance for applicants", updated 12 October 2026 (Renewables Obligation and Feed-in Tariff exemption from April 2027, Capacity Market from October 2027; eligible sectors are manufacturing industries). https://www.gov.uk/government/publications/british-industrial-competitiveness-scheme-business-guidance/british-industrial-competitiveness-scheme-guidance-for-applicants

28 HM Treasury, "The Data Centre Covenant", policy paper, 28 October 2026, section 1, "Lower electricity bills". https://www.gov.uk/government/publications/data-centre-covenant/the-data-centre-covenant

29 House of Commons Library, "Data centres", Research Briefing CBP-10315, 2026 (data centres are not eligible for the British Industrial Competitiveness Scheme; AI Growth Zone price discount to be consulted on). https://researchbriefings.files.parliament.uk/documents/CBP-10315/CBP-10315.pdf

30 House of Commons Library, "Data centres", Research Briefing CBP-10315, 2026 (data centres are not eligible for the British Industrial Competitiveness Scheme; AI Growth Zone price discount to be consulted on). https://researchbriefings.files.parliament.uk/documents/CBP-10315/CBP-10315.pdf

31 Ana Camacho McCluskey, William Blyth, Robert Gross and Richard Carmichael, "The Price of Power: Wholesale market price formation, policy costs and domestic electricity bills in Britain", UK Energy Research Centre discussion paper, November 2025.

6. Paying for the peak: the Capacity Market

Every year the government buys enough supply capacity (power stations, batteries, imports and demand that can be switched off) to keep the lights on through a cold winter evening. It does so through auctions held four years ahead. Suppliers pay for it in proportion to their customers' use between 4pm and 7pm on winter working days, and pass the cost to bills.[32] Households carry about half of this cost.[33] The International Energy Agency identifies the same route: extra demand raises costs as systems "procure additional firm capacity to maintain adequacy", and these costs reach consumers through capacity payments.[34]

The amount bought depends on NESO's forecast of peak demand, and the government's target moves broadly one for one with that forecast: NESO's high-demand case adds 2.7 GW to peak and 2.71 GW to the capacity needed.[35] NESO now counts data centres as adding 3.7 GW to winter peak demand over the next decade.[36] That is 1.7 times their extra average load (for the whole year) in NESO's own outlook. NESO does not publish this ratio: it is this report's arithmetic on two NESO documents. The likeliest explanation is that NESO converts data centres' annual demand to peak with the fixed ratios it uses for industrial and commercial users, but NESO has not confirmed this, and the capacity report could instead assume a different build-out from the Ten Year Outlook.

What extra demand costs depends on how tight the market is (Figure 2). When there is plenty of spare capacity, as in the auction for 2029/30, an extra gigawatt of demand moves the price little. When the market is tighter, as in the four auctions for 2025/26 to 2028/29, it pushes the price up steeply, in the last three towards the cap. NESO's own projections show the total supply requirement rising from about 41 GW in 2030/31 to 46 GW by the mid-2030s, beyond what bid into the latest auction.[37] The report therefore uses the spare 2029/30 market for 2029 and 2030, and the tighter markets for 2031 onwards.

The cost to households depends not on how expensive capacity is but on how far the price rises when data-centre demand is added.

32 EMR Settlement, "Key figures for payments 2025/26" (total annual capacity payments £1,892m; gross demand in periods of high demand 10.67 TWh). https://www.emrsettlement.co.uk/document/settlement-data/key-figures-for-payments-2025-26/

33 Ofgem, Energy price cap, Annex 2: wholesale cost allowance methodology, model v1.30, sheets 4a, 5b, 6a and 6d (October to December 2026 period). https://www.ofgem.gov.uk/sites/default/files/2026-08/Annex-2-wholesale-cost-allowance-methodology-v1.30_data_removed-2.xlsx

34 International Energy Agency, "Powering Artificial Intelligence: Strategies for integrating data centres into electricity systems", report prepared at the request of France's G7 Presidency, 2026, p.50.

35 NESO, Electricity Capacity Report 2026, its Data Workbook and its Methodology and Assumptions Book (delivered to DESNZ 29 May 2026, published 21 July 2026). Underlying peak demand rises 14.3 GW over ten years, including "a significant increase in data centre demand (3.7 GW)" (report p.28); target response to peak demand in Data Workbook Figure A3; targets for later years in Figures A5 to A8. https://emrdeliverybody.nationalenergyso.com/IG/s/article/Electricity-Capacity-Report-ECR

36 NESO, Electricity Capacity Report 2026, its Data Workbook and its Methodology and Assumptions Book (delivered to DESNZ 29 May 2026, published 21 July 2026). Underlying peak demand rises 14.3 GW over ten years, including "a significant increase in data centre demand (3.7 GW)" (report p.28); target response to peak demand in Data Workbook Figure A3; targets for later years in Figures A5 to A8. https://emrdeliverybody.nationalenergyso.com/IG/s/article/Electricity-Capacity-Report-ECR

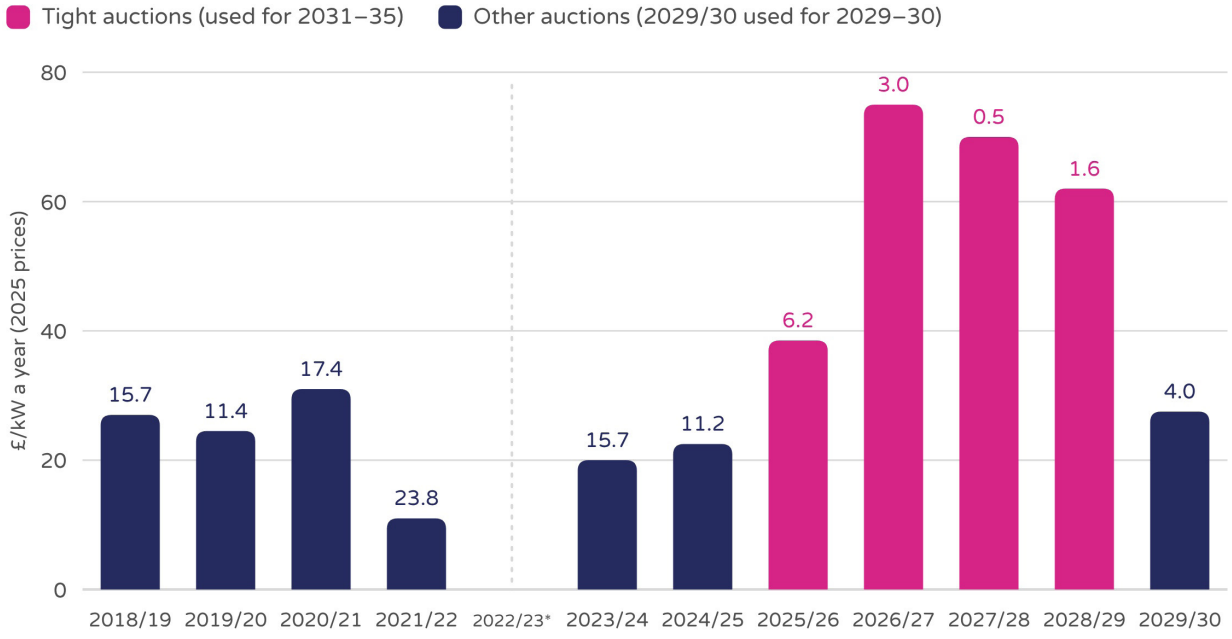
37 NESO, Electricity Capacity Report 2026, its Data Workbook and its Methodology and Assumptions Book (delivered to DESNZ 29 May 2026, published 21 July 2026). Underlying peak demand rises 14.3 GW over ten years, including "a significant increase in data centre demand (3.7 GW)" (report p.28); target response to peak demand in Data Workbook Figure A3; targets for later years in Figures A5 to A8. https://emrdeliverybody.nationalenergyso.com/IG/s/article/Electricity-Capacity-Report-ECR

The cost to households depends not on how expensive capacity is but on how far the price rises when data-centre demand is added. That turns on the bids just above the clearing price, which differ from auction to auction. In the 2029/30 auction, 44.1 GW bid for a 39.4 GW target and the price fell to £27.10/kW, but little capacity was offered between about £27 and £50, so added demand pushes the price up steeply. Applied to every year from 2029, that auction gives about £96 per household on the medium path rather than £61 (Table 3). What the report does not capture is new capacity built in response to a higher target, which would fill in the supply curve and lower the cost.

FIGURE 2

Capacity Market clearing prices, four-year-ahead auctions

£/kW a year in 2025 prices, by delivery year. Figures above the bars show GW offered above the clearing price.



Sources: NESO Final Results Reports; ONS CPI. Numbers above the bars are GW offered above the clearing price. The 2022/23 delivery year was procured in a three-year-ahead auction instead.

On that basis data-centre growth adds about **£61 per household** over 2029 to 2035 on the medium path, £26 on the low and £142 on the high. Almost all of it is the price effect: the extra demand raises the price paid for all the capacity bought in each auction. Capacity holding agreements from earlier auctions keeps their prices; each auction's target is set net of those agreements, so the calculation allows for this. Data centres pay their own share through their suppliers, and then households pay the difference.

7. Paying for wiring

DISTRIBUTION

Since 2023 a business connecting to the local network pays for its own connection but not for reinforcing the network behind it, unless the cost exceeds £1,720 per kVA; below that, reinforcement is shared by all users.[38] At Ofgem's average reinforcement cost (about £430 per kVA), with a fifth of the data-centre pipeline connecting at distribution level,[39] and with households paying 46% of distribution revenue,[40] the cost to households is about **£3 per household** over the decade (£1 to £6). Data centres on the local network also pay distribution charges, taking a share of the network companies' allowed revenue; if that revenue is fixed, households' charges fall by about £6 over the decade. That is a lower bound, because UK Power Networks' revenue by customer group could not be obtained for this report.

TRANSMISSION

Transmission charges work differently. Of the £6.4 billion that consumers pay each year, £6.3 billion is a fixed national sum, the demand residual. Since 2023 it has been charged as a fixed daily amount per site, flat for households and banded by size for businesses, but it is first split between households and businesses in proportion to their consumption: households pay 39% of it.[41] A data centre that connects adds to business consumption, so households' share falls, with a lag, because each year's split is set from consumption about a year earlier. Set against that is the cost of the new transmission works data centres need. Ofgem's latest funding decisions name data-centre customers for several projects: £97 million for a 300 MW site at Kingsnorth, £320 million for up to 860 MW at Bridgend, £658 million for a 1,400 MW AI data centre at Tees Dock.[42] They imply about £0.44 million per megawatt of data-centre capacity.

Data centres may also force wider reinforcement of the main grid, such as the lines that carry power into London. No published source attributes any of that to them. But NESO's charges are built on its own estimate of what extra demand in each area costs the grid in the long run. For London that estimate implies about £0.08 million of wider reinforcement per megawatt of peak demand, or up to £0.27 million if the cost of building lines is updated as an industry review has proposed.[43,44] Applied to all new data-centre capacity, that is £0.5 billion to £1.7 billion by 2035 on the medium path. In all, data centres on the medium path need about £3 billion to £5.5 billion of network investment by 2035: £0.5 billion to £0.8 billion of distribution reinforcement, £1.8 billion to £3.0 billion of transmission works built for them, and the wider reinforcement. Households pay part of it through their network charges, while data centres take on part of households' existing network costs.

38 Ofgem, "Access and Forward-looking Charges Significant Code Review: Final Decision", 3 May 2022, pp.45 to 50 (demand high-cost cap £1,720/kVA, "four times the average reinforcement costs of connection offers"). https://www.ofgem.gov.uk/sites/default/files/2022-05/Access%20SCR%20-%20Final%20Decision.pdf

39 Ofgem, "Proposed data centre connection reforms", consultation, 29 July 2026 (about 73 GW of data centre connection requests; 14.1 GW at distribution). https://www.ofgem.gov.uk/consultation/proposed-data-centre-connection-reforms

40 Common Distribution Charging Methodology models for charging year 2025/26 published by Electricity North West, National Grid Electricity Distribution (four areas), SSEN (two), SP Energy Networks (two) and Northern Powergrid (two); sheets "Net revenue summary" and "General inputs". UK Power Networks' models could not be obtained.

41 NESO, "Final TNUoS Tariffs for 2026/27", January 2026, and its Tables workbook (Tables 8, 9, 17, 23, 25 and B). https://www.neso.energy/document/376336/download and https://www.neso.energy/document/376341/download

42 Ofgem, "RIIO-ET3 Load Re-opener, May 2026 submission window: draft determinations", eligibility assessment annex and data file, 27 August 2026 (Kingsnorth £96.7m for a 300 MW data centre; Bridgend £319.5m for up to 860 MW; Tees Dock £657.5m for a 1,400 MW AI data centre; Laleham £217.4m for five data centres, 393 MVA). https://www.ofgem.gov.uk/sites/default/files/2026-08/RIIO-ET3-load-re-opener-May-2026-submission-window-draft-determinations-eligibility-assessment-annex.pdf

43 NESO, "Final TNUoS Tariffs for 2026/27", January 2026, and its Tables workbook (Tables 8, 9, 17, 23, 25 and B). https://www.neso.energy/document/376336/download and https://www.neso.energy/document/376341/download

44 NESO, CUSC modification proposals CMP315 and CMP375 (expansion constant and expansion factors review), Final Modification Report, 7 February 2024, figures 11 and 12, and costing note of 7 October 2019 (annuity and overhead factor 0.084). Not yet decided by Ofgem. https://www.neso.energy/document/302061/download

Net of local and wider works, data centres *lower* household transmission charges by about **£35 per household** over the decade on the medium path (£25 to £38). The saving would vanish only if data centres forced about £10 billion of wider reinforcement by 2035, six times the top of the range above. It is included in the totals that follow; because the wider cost rests on a modelled signal rather than costed schemes, it is the least certain of the network figures.

BALANCING

The cost of balancing the system reached £3.1 billion in 2025/26.[45] Most of it is the cost of grid constraints: paying wind farms, mainly in Scotland, to switch off when the grid cannot carry their power south, and paying gas plants further south to switch on in their place. The rest buys reserve and response and covers NESO's own costs. It is recovered as a flat charge per unit of demand, so data centres paying it would lower households' share by about £14 over the decade if the total cost were unchanged. Whether data centres change the total depends on where they are built. Flexible demand placed behind the Scottish bottlenecks would cut it: NESO estimates 5 GW could save consumers £5 billion.[46] Most data centres are planned in the south, where no such saving is documented, and nobody has estimated the effect of inflexible demand.

8. The total

Adding the routes together gives the figures in Table 2 and Figure 3. There are two totals because it is unclear whether data centres share two of Britain's charges, for balancing the grid and for the local distribution network, or add to them. The lower total assumes they share them, as they share the renewable levies and transmission charges. The upper total assumes they don't, because these are the costs most likely to grow with demand: balancing if new demand in the south makes the grid harder to manage, distribution because network companies can reopen their allowances when demand grows.

> On the high path, data-centre growth costs households about **£52 to £88** over 2026 to 2035, or about **£1.6 billion to £2.6 billion** across Great Britain. These figures sit near the bottom of the model's own uncertainty range, whose middle estimates are £65 to £101 (Annex A9). The annual cost peaks at £16 to £19 in 2030, then falls to £7 to £13 by 2035 (Figure 4). It falls after 2030 partly because the Capacity Market cost dips in 2031, when the model moves from the spare 2029/30 auction to the four earlier ones. It then stays lower even though that cost rises again, from about £15 a year in 2031 to £30 by 2035, because the offsets grow faster:

- **from 2031 some new generation is built for the extra demand, which lowers the wholesale effect;**
- **more wind comes onto Contracts for Difference, which enlarges the levy offset;**
- **data centres take a growing share of transmission charges.**

45 NESO, "Final BSUoS Tariffs 2026/27", December 2025, and Draft Tariffs 9 and 10, September 2026. https://www.neso.energy/document/375086/download

46 NESO, "Beyond 2030", 2024 (5 GW of flexible demand located behind Scottish bottlenecks "could save consumers £5 billion"), and Arup for NESO, "Demand for Constraints: cost-benefit analysis", 14 March 2025. https://www.neso.energy/document/315516/download and https://www.neso.energy/document/358366/download

TABLE 2

Cost of data-centre growth to households, 2026 to 2035

£ per household, 2025 prices

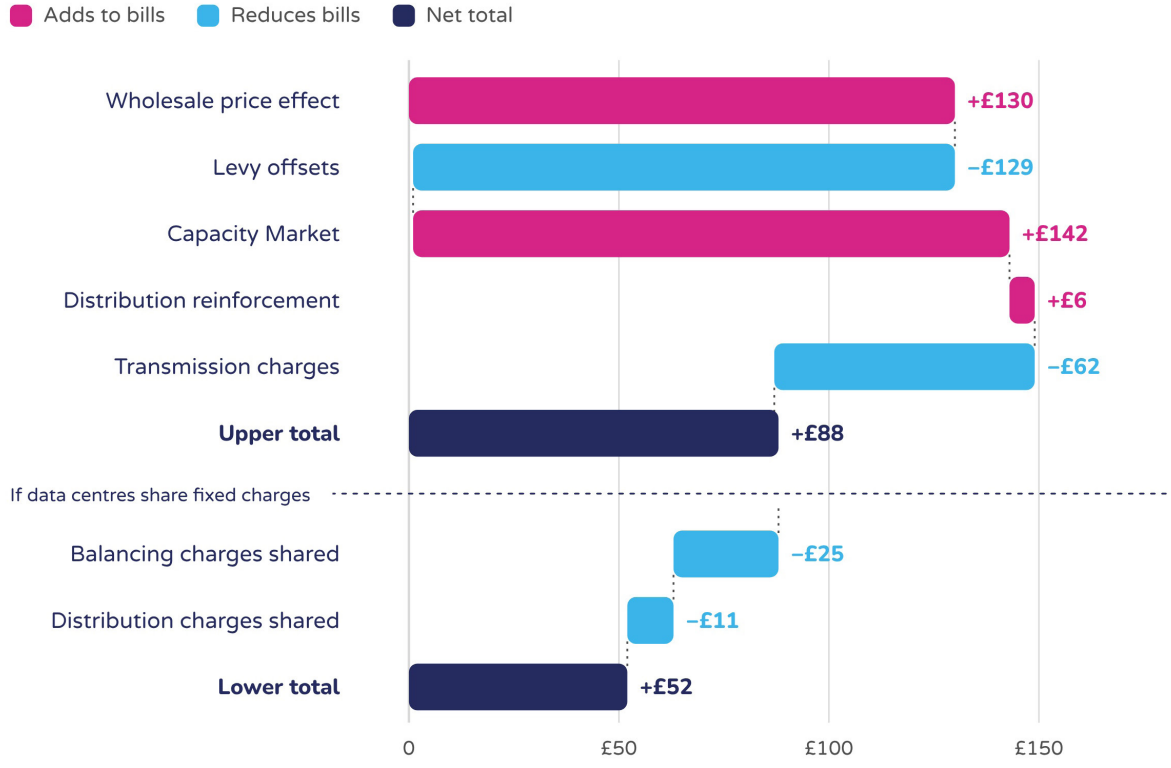
Scenario	Low	Medium	High
Data-centre use in 2035, TWh	10.9	22.0	35.9
Wholesale price effect	+23	+71	+130
Levy offsets	−24	−72	−129
Capacity Market	+26	+61	+142
Distribution network	+1	+3	+6
Transmission network	−11	−35	−62
Total, upper	**+15**	**+28**	**+88**
Balancing charges shared	−5	−14	−25
Distribution charges shared	−2	−6	−11
Total, lower	**+9**	**+8**	**+52**
Across GB households	£0.3bn to £0.5bn	£0.2bn to £0.8bn	£1.6bn to £2.6bn
Annual cost in 2035	£0.80 to £2.10	−£1.60 to £1.90	£6.70 to £12.80

Central gas prices and interconnectors. Sensitivities in Table 3; within-case statistical uncertainty in Annex A9. GB totals multiply each year's per-household cost by that year's households. Totals may not sum because of rounding.

FIGURE 3

Where the high-path cost comes from

£ per household, 2026 to 2035, real 2025 prices. Each bar starts where the previous one ends.

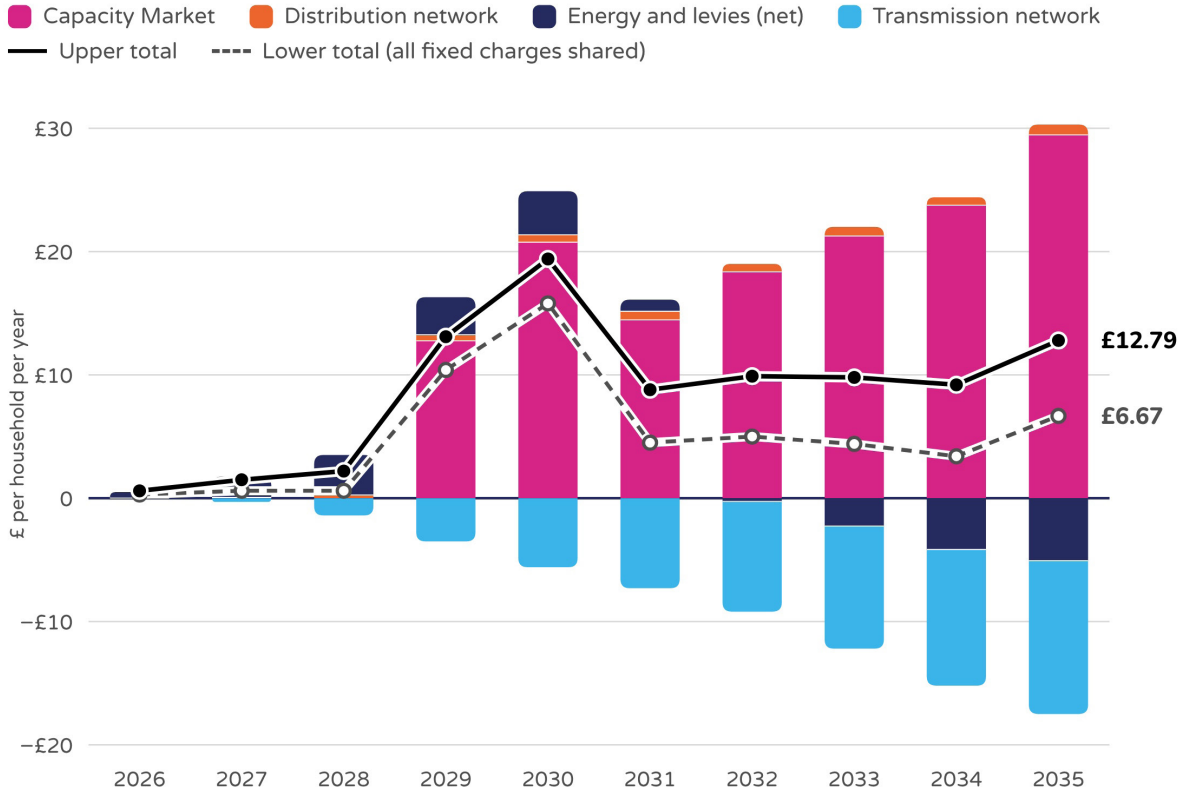


Source:authors' model.

FIGURE 4

Annual cost per household, high path

£ a year. Bars show the upper total by route; lines show the upper and lower totals.



Source: author's model. Bars show the upper total by route; the dashed line is the lower total. The levy and transmission offsets grow through the 2030s as more wind comes onto fixed-price contracts and more data centres share the fixed charges.

For scale: at its peak of £16 to £19 a year, the cost is about 1.5% to 1.8% of DESNZ's average 2025 electricity bill of £1,069, for about 3.4 MWh a year. The model's average household uses slightly more by 2030 (3.8 MWh), so the share of its own bill is a little lower. For the whole fleet of data centres, including those running today, the energy, levy and Capacity Market routes alone come to about £200 per household on the high path. That cannot be split into existing and new data centres by subtraction: in a tight capacity market each extra gigawatt raises the price paid for all capacity, so removing every data centre saves more than the sum of removing them in parts.

OTHER ESTIMATES.

One published estimate for Britain reaches the opposite sign. Robert Boswall finds that data centres would lower household bills by £16 to £20 a year by 2030.[47] His reasoning is that much of the cost of running the grid is fixed. The charges for transmission, balancing and distribution recover set sums of money, agreed in advance, which are divided among all the electricity used. A data centre that uses more electricity takes on a larger share of those sums, so each household's share falls. On that reasoning, the more a data centre uses, the lower household bills become. The same effect appears in this report, and measured per unit of new demand it is larger here: about 36p per household for each terawatt-hour in his, about 61p here (medium path, 2030, net of network works), mainly because the charges are spread over a smaller base of consumption (244 TWh, against his 365 TWh).

The opposite direction of the impacts comes from different assumptions about the scale and coverage of the data centre rollout. Boswall assumes the government's ambition of 6 GW by 2030, running at 85% of capacity: about 45 TWh a year of new demand, against 8 TWh here in 2030 and 22 TWh of total data-centre use by 2035. Nothing measured in Britain supports that rate of use: sites on UK Power Networks' grid draw about a fifth of their connected capacity. He assumes that data centres pay for the network reinforcement they cause. In fact they pay only for assets that serve them alone, and shared reinforcement, such as the transmission projects Ofgem has funded for data centres, is added to the sums everyone pays. Above all, higher use does not only spread fixed costs. It also raises costs that are not fixed: the wholesale price of power, and the price paid in the Capacity Market for enough supply to meet the winter peak, the largest cost in this report. Boswall leaves both out, along with the renewable levies, and notes himself that the wholesale effect could erase his saving if new supply is not built in time.

In the United States, where data centres take a larger share of demand, estimates run higher: researchers at Carnegie Mellon and North Carolina State universities project that data-centre growth could raise average generation costs by 8% by 2030, and by more than a quarter in central and northern Virginia.[48] The British figure is far smaller because data centres are a smaller share of demand and pay the levies that make up much of a British bill. The US evidence also shows the sharing effect at work: states with the fastest growth in demand saw prices fall in real terms, though households gained less than other customers.[49]

9. Who pays

BY INCOME

> The cost falls on each household in proportion to its electricity use. The Office for National Statistics' published spending tables, with the fixed standing charge removed, show the richest tenth of households, ranked by equivalised disposable income, using about 45% more electricity than the poorest.[50] On the high path the richest pay somewhat more in pounds: about £68 to £115 over the decade, against £47 to £79 for the poorest. As a share of spending the burden falls steeply (Figure 5): the poorest tenth gives up about two and a quarter times as large a share of its spending as the richest.

47 Robert Boswall, "Data Centres' Dilution Dividend", 24 April 2026 (6 GW at an 85% load factor, about 45 TWh a year; transmission, balancing and distribution charges only). https://robertboswall.substack.com/p/data-centres-dilution-dividend

48 Carnegie Mellon University and North Carolina State University, Open Energy Outlook analysis, July 2025: data-centre growth "could increase average U.S. electricity generation costs by 8%" by 2030, and by more than 25% in central and northern Virginia. https://www.cmu.edu/work-that-matters/energy-innovation/data-center-growth-could-increase-electricity-bills

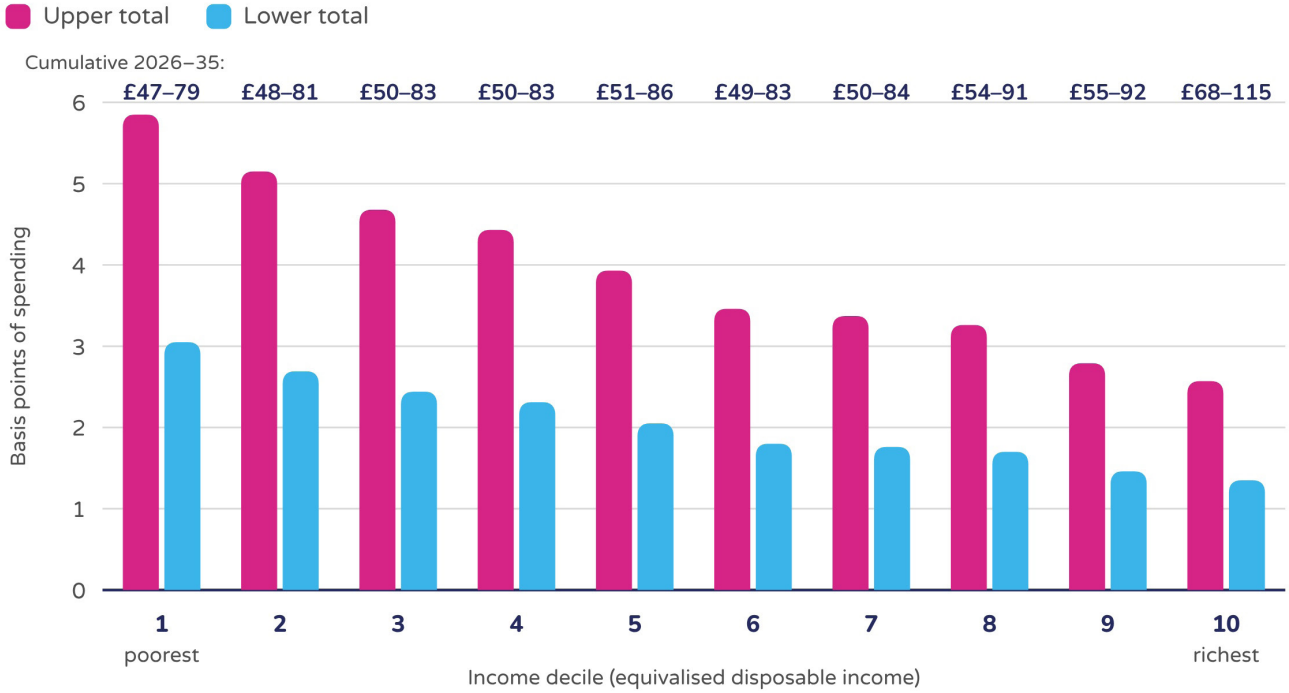
49 Lawrence Berkeley National Laboratory and The Brattle Group, "Retail electricity price trends and drivers", October 2025: states with the highest load growth "saw average prices decline in inflation-adjusted terms"; residential customers benefited "to a lesser extent". https://eta-publications.lbl.gov/sites/default/files/2025-10/full_summary_retail_price_trends_drivers.pdf

50 Office for National Statistics, "Family spending in the UK: April 2024 to March 2025", workbook 1 and table 3.1E. https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/expenditure/bulletins/familyspendingintheuk/april2024tomarch2025

FIGURE 5

Annual cost in 2035 as a share of spending, by income decile

High path, basis points. Cumulative cost per household, 2026–35, shown above each decile.



Sources: ONS Family Spending FYE2025, Table 3.1E, with the standing charge (£4.23 a week, the Ofgem price-cap average for that year) removed; author's model. One basis point is one hundredth of one per cent.

As a share of income the poorest tenth pays about six times as much as the richest. That ratio is inflated, because household surveys understate the resources of the poorest tenth (the self-employed, students, people briefly on low incomes), so the spending ratio is the safer measure. Comparing the second and ninth tenths, which avoids the problem, the poorer household pays about three times the share of its income. On any of these measures the burden is regressive.

BY HEATING AND BY REGION

Households with electric heating, about one in thirteen, use a third more electricity than average and on the high path would pay about £69 to £117 over the decade. [51] By region, the cost runs from about £45 to £75 per household in the North East to about £57 to £96 in the East and South East, following electricity use. [52] Distribution charges, set separately in each network area, would add a little more where data centres cluster, mainly London and the Thames Valley; these regional shares are not modelled. The Capacity Market is charged on use between 4pm and 7pm in winter; Ofgem's settlement profiles show electrically heated (Economy 7) households using a smaller share of their electricity in that window than other households, so allocating it by annual use slightly overstates their share of that channel. [53]

51 Office for National Statistics and DEFRA, Living Costs and Food Survey 2023-24, UK Data Service SN 9468 (End User Licence), processed through the household layer of the author's budget microsimulation (4,202 GB households, grossed).

52 DESNZ, "Sub-national electricity consumption statistics, 2005 to 2024". https://assets.publishing.service.gov.uk/media/69426e905431f4f94d7f0b5e/Subnational_electricity_consumption_statistics_2005-2024.xlsx

53 Ofgem, Energy price cap, Annex 2: wholesale cost allowance methodology, model v1.30, sheets 4a, 5b, 6a and 6d (October to December 2026 period). https://www.ofgem.gov.uk/sites/default/files/2026-08/Annex-2-wholesale-cost-allowance-methodology-v1.30_data_removed-2.xlsx

FUEL POVERTY

Data-centre growth would push more households into fuel poverty and deepen it for those already there (Table 4). The effect is largest around 2030, when the annual cost peaks. **On the high path, up to about 77,000 more households across Great Britain would spend more than a tenth of their income, after housing costs, on energy in 2030: up to about 62,000 in England, 10,800 in Scotland and 3,700 in Wales**. On the medium path the figure is up to about 20,000. By 2035, as the shared levies and charges grow with data centres' use, the figures fall, to up to about 51,000 on the high path and 8,000 on the medium.[54]

TABLE 4

Effect of data-centre growth on fuel poverty, 2030 and 2035

	Medium		High	
	2030	2035	2030	2035
Extra cost to a fuel-poor household in England, £ a year	£3.20 to £5.10	−£1.50 to £1.90	£16 to £19	£7 to £13
… if it heats with electricity	£4.60 to £7.30	−£2.20 to £2.70	£22 to £27	£9 to £18
Increase in England's fuel poverty gap	£8m to £12m (0.9% to 1.3%)	−£4m to £4m (−0.4% to 0.5%)	£37m to £45m (4.1% to 5.0%)	£15m to £30m (1.7% to 3.3%)
Extra households spending over 10% of income on energy:				
England	11,000 to 17,000	−5,000 to 6,000	51,000 to 62,000	21,000 to 41,000
Scotland	1,800 to 2,900	−900 to 1,100	8,800 to 10,800	3,700 to 7,100
Wales	600 to 1,000	−300 to 400	3,000 to 3,700	1,300 to 2,400
Great Britain	**13,000 to 20,000**	**−6,000 to 8,000**	**63,000 to 77,000**	**26,000 to 51,000**

Sources: Office for National Statistics and DEFRA, Living Costs and Food Survey 2023-24; DESNZ, Annual Fuel Poverty Statistics in England, 2026; author's model. Ranges run from the lower to the upper total (Section 8). Household counts are direct counts in the survey data, after housing costs (Annex A10). A fuel-poor household is taken to use 0.98 times the average household's electricity, DESNZ's measured use in the areas of England with the highest fuel poverty rates (National Energy Efficiency Data-Framework, 2024); on income alone the figure would be 0.79, and on energy efficiency band 1.06.

Every fuel-poor household pays more, not only those pushed over a threshold. **On the high path a fuel-poor household in England would pay up to £19 a year more in 2030, and up to £27 if it heats with electricity.** On the medium path it would pay about £3.20 to £5.10 (£4.60 to £7.30 with electric heating), and by 2035 about −£1.50 to £1.90. The fuel poverty gap, the amount by which fuel-poor households' bills would have to fall to lift them all out of fuel poverty, would widen by up to **£45 million (5.0%)** in 2030 on the high path, and by £8 million to £12 million (0.9% to 1.3%) on the medium path.

The counts come directly from household survey data. Each household's extra cost is scaled by its own electricity use, and the count is the number of households pushed over the 10% line. The survey records what households actually spend on energy, not what they would need to spend to keep warm, so it may miss households that already ration energy; on that ground the counts are more likely too low than too high. They are rounded, and rest on a sample of about 2,900 households in England, 520 in Scotland and 370 in Wales; the Welsh figures, from the smallest sample, are the least certain.

54 Office for National Statistics and DEFRA, Living Costs and Food Survey 2023-24, UK Data Service SN 9468, processed through the household layer of the author's budget microsimulation; author's count of households whose fuel spending would exceed 10% of income after housing costs (Annex A10).

10. Inflation: data centres at home, AI abroad

Data centres built in Britain will barely register in the national inflation figures. Higher electricity costs raise household bills directly and businesses' costs indirectly; traced through the national input-output tables, that show how one market is linked to another,[55] a 1% rise in electricity prices raises the consumer price level by about 0.045%. The medium path's cost of –£2 to £2 a year by 2035, –0.1% to 0.2% of a typical bill, therefore adds about –0.01% to 0.01% to the price level by 2035, and about 0.02% at its peak around 2030, assuming businesses' electricity costs move in proportion to households'. The global build-out of AI is a different matter, and a different question from the rest of this report. Three channels run through world markets:

- **Chips and devices.** Memory chip prices more than doubled in 2026 as manufacturers switched capacity to AI servers. Gartner forecasts that this will raise PC prices by 17% and smartphone prices by 13%.[56] The Bank of England judges that AI-related demand will add a little over 0.1 percentage points to UK inflation by the end of 2026.[57] This is the largest single effect identified in this report.

- **Gas.** If AI data centres worldwide were powered by gas, the European Central Bank estimates they would account for about 2 percentage points of a 9% rise in European gas prices.[58] Gas sets the price of British electricity in most hours, so this would feed through to bills. Some British data centres plan to generate their own power from gas, though NESO has yet to identify one doing so.[59] In the United States a large number of on-site gas power projects have been proposed, though many remain at the proposal stage.[60] Power generated on site is not drawn from the grid, which would lower the grid costs estimated here, but it adds to gas demand; the effect on gas prices, set in international markets, is not estimated. Gas prices have been forced upwards this year by conflict in the Gulf; extended disruption could hold them higher, for longer.

- **Metals.** Goldman Sachs's model attributes the largest share of copper's price rise since early 2025, about 20 of 43 percentage points' increase, to expectations of AI-related demand.[61] Copper reaches consumer prices only slowly, through equipment and construction, and has a limited eventual impact on overall consumer prices here.

These global effects lie outside the household-bill model in this report and are not added to it. In the United States, where data centres are concentrated, the effect on power prices is already measurable: data-centre load accounted for 38% of the cost of the latest capacity auction in the largest US power market.[62]

55 Office for National Statistics, UK input-output analytical tables, 2023 (product by product), and ONS CPI weights 2026 (Annex A, tables W1 to W3).

56 Gartner, forecast of February 2026: DRAM and SSD prices up 130% by end-2026, raising PC prices by 17% and smartphone prices by 13%.

57 Bank of England, Monetary Policy Report, July 2026, Box D: AI-related demand "is expected … to add a little over 0.1 percentage points to UK consumer price inflation by the end of the year".

58 Vasile Burian and Arthur Stalla-Bourdillon, box in ECB Economic Bulletin, Issue 2/2025: if all AI data-centre energy demand were met by gas, gas prices could rise by around 9% in Europe and Asia by 2026, of which AI-driven data centres would account for around 2 percentage points.

59 NESO, Electricity Capacity Report 2026, Methodology and Assumptions Book, section 3.6.3: NESO is tracking "multiple sites in the process of planning gas connections" but has no "operational facilities with gas gensets identified".

60 International Energy Agency, "Powering Artificial Intelligence: Strategies for integrating data centres into electricity systems", report prepared at the request of France's G7 Presidency, 2026, p.9.

61 Goldman Sachs commodities research (Lavinia Forcellese and colleagues), "Cumulative contribution to copper price changes", chart published by Yahoo Finance, 20 July 2026: an "AI data centre basket" is the largest contributor to copper's rise since January 2025. Values read from the chart by the author.

62 Federal Reserve Bank of Dallas, Working Paper 2606, March 2026, on data centres and US electricity prices; and Monitoring Analytics (PJM independent market monitor), report of 27 July 2026: data-centre load accounted for 38.2% of the 2028/29 PJM

11. Sensitivities in this analysis

- **How data centres are counted at the peak.** If NESO counted data centres at their measured load rather than 1.7 times it, the Capacity Market cost on the medium path would fall from about £61 to about £40, taking the total down by about £21. NESO has not confirmed how it counts data centres at the peak (Section 6).[63]

- **Flexibility and on-site supply.** NESO has removed most assumed data-centre flexibility from its outlook.[64] Ireland now requires large new data centres to provide on-site generation or storage, as the expert panel notes.[65] A data centre that cut its demand at the winter peak would remove most of the Capacity Market cost it causes. But the International Energy Agency cautions that interrupting computing is expensive, since AI capacity can cost USD 20 billion to 30 billion per gigawatt a year to rent, so active management of computing loads remains rare; flexible (non-firm) grid connections are the more common route, and 81% of demand projects in Britain's connection queue say they would accept one.[66] The government's Data Centre Covenant commits it to develop more flexible connections for data centres, with "backstop operational control measures", and to permit temporary on-site generation for "exceptionally strategic projects" until a grid connection is available.[67]

- **Who pays for discounts.** The AI Growth Zone discount is undesigned. If paid for from the constraint savings it is meant to capture, it costs other consumers nothing; if loaded onto bills, up to £28 per household.[68]

- **Where data centres go.** A data centre in Scotland, behind the grid's bottlenecks, can cut balancing costs; one in west London can require new transmission. NESO thinks at most a fifth of future data-centre demand could locate in Scotland.[69]

- **How much is built.** The cost rises with growth, but not in proportion: per terawatt-hour of growth by 2035 it is about £1.40 to £2.40 on the low path, £0.50 to £1.60 on the medium and £1.70 to £2.80 on the high, where the Capacity Market tightens most. The connection queue is far larger than any of the three paths; if even a fraction of it is built beyond NESO's outlook, the high path becomes the relevant one.

63 Panel of Technical Experts, "Report on the NESO Electricity Capacity Report 2026", DESNZ, 2026, paragraphs 40 to 43 and recommendations 108 to 110. https://assets.publishing.service.gov.uk/media/6a5e1a5013cf36b2315a5e6e/panel-of-technical-experts-report-on-the-NESO-electricity-capacity-report-2026.pdf

64 NESO, Electricity Capacity Report 2026, its Data Workbook and its Methodology and Assumptions Book (delivered to DESNZ 29 May 2026, published 21 July 2026). Underlying peak demand rises 14.3 GW over ten years, including "a significant increase in data centre demand (3.7 GW)" (report p.28); target response to peak demand in Data Workbook Figure A3; targets for later years in Figures A5 to A8. https://emrdeliverybody.nationalenergyso.com/IG/s/article/Electricity-Capacity-Report-ECR

65 Panel of Technical Experts, "Report on the NESO Electricity Capacity Report 2026", DESNZ, 2026, paragraphs 40 to 43 and recommendations 108 to 110. https://assets.publishing.service.gov.uk/media/6a5e1a5013cf36b2315a5e6e/panel-of-technical-experts-report-on-the-NESO-electricity-capacity-report-2026.pdf

66 International Energy Agency, "Powering Artificial Intelligence: Strategies for integrating data centres into electricity systems", report prepared at the request of France's G7 Presidency, 2026, pp.8, 9 and 45. On Ireland, p.9: certain new data centres must "contribute to system adequacy by building or contracting with new dispatchable capacity" (citing the Commission for Regulation of Utilities, 2025).

67 HM Treasury, "The Data Centre Covenant", policy paper, 28 October 2026, on strategic data centres and wider reforms. https://www.gov.uk/government/publications/data-centre-covenant/the-data-centre-covenant

68 House of Commons Library, "Data centres", Research Briefing CBP-10315, 2026 (data centres are not eligible for the British Industrial Competitiveness Scheme; AI Growth Zone price discount to be consulted on). https://researchbriefings.files.parliament.uk/documents/CBP-10315/CBP-10315.pdf

69 NESO, written evidence to the Environmental Audit Committee inquiry on data centres, DCU0081, 2026. https://committees.parliament.uk/writtenevidence/166090/html/

TABLE 3

Sensitivity of the medium-path cost

Change to both totals, £ per household, 2026 to 2035

Change	Effect, £
Gas prices: government low / high case	about −13 / +22
New generation built for the extra demand: none / sooner	+10 / −1
Interconnection: most / least NESO considers	about −5 / +6
Capacity Market at measured data-centre peak	−21
AI Growth Zone discount, if funded by other bill payers	up to +28
A quarter more wind on Contracts for Difference	−14
Capacity Market priced on the 2029/30 auction in every year	+35
Renewables Obligation pot falling to zero at its end in 2037	about +8
VAT on electricity at 0% throughout	about −0.4 / −1.3
Transmission residual held at its 2026/27 level	+19

Change to both medium-path totals (central £8 to £28). Source: author's model.

12. Conclusion

Data-centre growth on the scale the system operator expects will cost British households about £8 to £28 each over the next decade, or £0.2 billion to £0.8 billion overall, with the burden falling heavier for those on low incomes. The cost is not mainly a matter of dearer electricity, which data centres' share of the subsidy bill largely absorbs, whilst network charges lower household bills in this modelling, as data centres take a share of their largely fixed costs. The primary channel for the cost is through the need to buy enough capacity to meet a winter peak of supply that data centres raise higher, on the system operator's accounting. The government's Data Centre Covenant asks data centres to pay their fair share of energy costs, so that households do not "pick up the bill".[70] Through the levies and network charges, on these findings, they do. Through the Capacity Market, households still pick up part of it.

How data centres are counted at the peak, whether they are required to be flexible, where they are built and who pays for the discounts they are offered will decide whether households pay closer to £10 or closer to £90. Each of those choices is open now.

70 HM Treasury, "The Data Centre Covenant", policy paper, 28 October 2026, section 1, "Lower electricity bills". https://www.gov.uk/government/publications/data-centre-covenant/the-data-centre-covenant

Annex A. Technical annex

At the centre of the method is a simulation of the British electricity system, hour by hour, from 2026 to 2035. In each hour it meets demand from the cheapest sources available: wind, solar and nuclear first, then gas plants in order of efficiency, imports and storage. The price in that hour is the cost of the last unit needed. The simulation is run twice, once with data centres growing along each path and once with them held at their 2025 level, and the difference in prices is the data centres' effect. A simplified system misses some of how the real market behaves: prices that rise when spare capacity is short, and prices that fall below zero when subsidised wind is plentiful. So the simulated prices are adjusted to reproduce Britain's actual prices over 2021 to 2025 before they are used to look forward.

To turn this price difference into a household bill impact, it has to be multiplied by each household's electricity use, and by the costs a supplier adds on the way: network losses, its margin and VAT. The other parts of the bill are calculated separately, each from its own published rules. Subsidy levies are fixed sums divided across every unit sold, so the calculation asks how much each household's share changes when data centres buy more units. Contract for Difference payments are worked out hour by hour from the simulated prices and the output of the wind and solar farms that hold the contracts. The Capacity Market is recalculated by rerunning past auctions with demand raised by the data centres' peak. Network costs follow the regulator's published costs and its rules on who pays.

The inputs are of three kinds. Some are measured: past fuel prices, weather, auction results, metered consumption. Some are official projections: NESO's plan for the power system, the government's gas price cases. Some are currently judgements made where evidence cannot yet be pinned down, such as how much new generation would be built for the extra demand, or whether fixed charges stay fixed. Where a figure has not been published, the report does not supply one by assumption.

The sections below set out each step in turn. All money is in real 2025 pounds unless stated; "growth" means data-centre demand above its 2025 level; cumulative figures sum 2026 to 2035. The code and outputs are available from the author.[71]

A1. STRUCTURE

For each path and year the model compares two worlds: A, with the data-centre path, and B, the counterfactual with data-centre demand held at its 2025 level (or, for the whole fleet, removed). The household cost in year t is the sum over channels c:

$$C_t = W_t + L_t + K_t + N_t + T_t \; [\, + B_t + D_t \,]$$

for wholesale, levies, Capacity Market, distribution reinforcement and transmission; the lower total adds the sharing of balancing (B) and distribution (D) charges. Cumulative cost is $\Sigma_t \, C_t$ over 2026 to 2035.

71 The model code, inputs and outputs are held in the project repository and are available from the author.

A2. DATA-CENTRE LOAD

Households are ONS estimates and projections for Great Britain, rising from 27.4 million in 2021 to 30.7 million in 2035; per-household figures divide each year's cost by that year's households, and GB totals multiply back. The 2025 base is 4.603 TWh (NESO Ten Year Outlook 2026: 2.019 GW connected at 29% measured utilisation), consistent with DESNZ's metered 4.46 TWh for 2024.[72,73] Medium follows NESO's Ten Year Outlook (22.0 TWh in 2035). Low extends the 2020 to 2024 metered log-linear trend (9.0% a year) to 10.9 TWh. High is 35.9 TWh, equivalent to NESO's 8.4 GW of connected capacity in 2035 at about 49% utilisation; no measured utilisation exists for the AI and cloud sites still to be built. Load is flat within the day and year, as the UK Power Networks site profiles show (window-to-mean ratio 1.017).[74]

A3. DISPATCH MODEL

A weekly rolling linear programme in hourly steps minimises the cost of meeting demand:

$$\min \Sigma_h \Sigma_g c_{g,h} \cdot x_{g,h} + V \cdot s_h \quad \text{subject to} \quad \Sigma_g x_{g,h} + \Sigma_i m_{i,h} + d^-_h - d^+_h + s_h = D_h + \Delta_h$$

where x are outputs of nuclear, biomass, wind, solar, five gas-plant efficiency tranches and peakers; m are interconnector imports, each priced off its own country's day-ahead price with a trading friction and a supply slope; d are storage discharge and charge; s is unserved load at V = £3,000/MWh; D is demand and Δ the data-centre increment. Gas cost $c = (P_{gas} + P_{CO2} \times 0.184)/\eta + VOM$, where the carbon price includes both UK ETS allowances and the Carbon Price Support. The dual of the energy balance is the hourly marginal price p^{LP}. Forward years use NESO's fleet, interconnector and storage plan, four historical weather years (2018, 2021, 2023, 2025) and DESNZ gas and carbon price assumptions.[75] In 2035 the model produces 28 to 44 TWh of gas generation (NESO about 29) and net exports of 24 to 39 TWh (NESO about 34).

A4. FROM MODEL PRICE TO MARKET PRICE

The linear programme omits scarcity premia and the negative bids of subsidised wind. It is mapped to the observed GB day-ahead price by:

$$\hat{p}_h = p^{LP}_h + r_h \cdot A(u_h) - B(p^{LP}_h), \quad A(u) = \Sigma_j a_j \cdot \max(0, u - k_j), \quad B(p) = b \cdot r \cdot \max(0, 0.75 - p/r)$$

where u is gas-fleet utilisation, r the fuel cost of a 50%-efficient gas plant, knots k = 0.4, 0.7, 0.9, fitted by least absolute error on 2021 to 2025 with leave-one-year-out checks (a = 0, 0.477, 0). The surplus-hour discount b is fixed at 0.22, which reproduces Britain's 2021 to 2025 mean price in surplus hours; its observed range (0.13 to 0.34) is drawn in the uncertainty analysis.

72 Department for Energy Security and Net Zero (DESNZ), "Energy Trends June 2026, special feature article: data centre electricity consumption in Great Britain, 2020 to 2024", 30 June 2026 (Official Statistics in Development; 239 sites, meter-matched). https://www.gov.uk/government/publications/energy-trends-june-2026-special-feature-article-data-centre-electricity-consumption-in-great-britain-2020-to-2024

73 National Energy System Operator (NESO), Ten Year Outlook 2026 (data centre demand 4.603 TWh in 2025 and 22.0 TWh in 2035; connected capacity 2.019 GW in 2025 and 8.4 GW in 2035).

74 UK Power Networks, Open Data Portal, "Data centre demand profiles" (half-hourly import for 96 data centre sites against their maximum import capacity).

75 DESNZ, "Fossil fuel price assumptions 2025". https://www.gov.uk/government/publications/fossil-fuel-price-assumptions-2025

A5. COUNTERFACTUAL AND SUPPLY RESPONSE

Whether removing data-centre demand would also have removed generation is the largest judgement in the model. No published estimate of the supply response exists. The central case holds supply fixed to the end of 2030, because that fleet is already contracted, and from 2031 lets only capacity not yet covered by awarded contracts respond, in proportion to awarded additions over NESO's planned additions. Earlier response gives £67 (medium, wholesale); no response gives £116. Most of that difference is offset in the levies, chiefly through the Contracts for Difference: with no response, the CfD offset rises from £39 to £74, so the total moves by only about £10 (Table 3).

A6. FROM PRICE TO BILL

The wholesale price effect is the demand-weighted mean difference between the two worlds, $\Delta p_t = \Sigma_h D_h (\hat{p}^A_h - \hat{p}^B_h)/\Sigma_h D_h$. The household cost is

$$W_t = \Delta p_t \times q_t \times 1.08 \times 1.026 \times 1.05$$

where q_t is household consumption per household (MWh), 1.08 grosses up for network losses, 1.026 for supplier margin and 1.05 for VAT. VAT on domestic electricity is zero from 1 October 2026 to 1 July 2027;[76] over that period the zero rate changes the totals by less than 10p, because the cost is still small. If it were made permanent, every figure in the report would be about 5% lower: £8 to £27 on the medium path (Table 3). Levies: the Renewables Obligation and other per-unit schemes are a fixed cost R_t spread over supply S_t, so growth lowers the household charge by $R_t \cdot (1/S^B_t - 1/S^A_t) \cdot q_t$; Contract for Difference top-ups are computed hour by hour, $\Sigma_h G^{CfD}_h (K - \max(\hat{p}_h, 0))$, from contracted wind and solar output G^{CfD}_h and strike price K (baseload nuclear and biomass contracts against the annual mean price), for the LCCC forecast plus the Drax contract; the pool is spread over supply.[77] The CfD offset is therefore weighted by when contracted generators produce, not by demand. The formula pays top-ups when prices are negative; contracts from the fourth allocation round onwards are paid nothing in any negative-price hour, and earlier ones nothing after six consecutive such hours,[78] so the pool is slightly overstated in surplus hours. The 2026 to 2035 medium-path offsets are: Renewables Obligation –£21.7, Feed-in Tariffs and the Sizewell C levy –£11.0, CfD pool spread over more units –£32.0, lower CfD top-ups –£7.4. Data centres are assumed to pay levies as ordinary non-domestic users, which is current law. The Renewables Obligation and Sizewell C pots follow the Office for Budget Responsibility's forecasts to 2030/31 and are held at that level, in real terms, thereafter; the Feed-in Tariff pot is held at its 2024/25 level throughout. Both overstate the 2030s, because the Renewables Obligation ends in March 2037 and Feed-in Tariff payments begin to expire around 2030. If the Renewables Obligation pot fell in a straight line from its 2030 level to zero at closure, the medium-path offset would be about £8 smaller and both totals about £8 higher (Table 3).[79,80]

76 HM Revenue and Customs, "Temporary zero rate of VAT for domestic electricity in Great Britain", Revenue and Customs Brief 10 (2026), 8 September 2026 (1 October 2026 to 31 March 2027; electricity only); HM Treasury, Autumn Budget 2026 Policy Costings, p.12 ("effective from 1 October 2026 until 1 July 2027"). https://www.gov.uk/government/publications/revenue-and-customs-brief-10-2026-temporary-zero-rate-of-vat-for-domestic-electricity-in-great-britain/temporary-zero-rate-of-vat-for-domestic-electricity-in-great-britain https://assets.publishing.service.gov.uk/media/6ae1883fe4367e5c8b0467df/AB26_Policy_Costing.pdf

77 Low Carbon Contracts Company, data portal: CfD generation, contract register and forecast generation (August 2026). https://dp.lowcarboncontracts.uk

78 Department for Business, Energy and Industrial Strategy, "Contracts for Difference: proposed amendments to the scheme, government response", November 2020, pp.51 to 52. https://assets.publishing.service.gov.uk/media/5fbc72958fa8f559e887e4f8/cfd-proposed-amendments-scheme-2020-ar4-government-response.pdf

79 The Renewables Obligation Order 2015, article 44: no certificates for stations accredited on or before 25 June 2008 after 31 March 2027, and for all others after the earlier of 20 years or 31 March 2037. https://www.legislation.gov.uk/uksi/2015/1947/article/44

80 House of Commons Library, "Data centres", Research Briefing CBP-10315, 2026 (data centres are not eligible for the British Industrial Competitiveness Scheme; AI Growth Zone price discount to be consulted on). https://researchbriefings.files.parliament.uk/documents/CBP-10315/CBP-10315.pdf

A7. CAPACITY MARKET

For each auction a, the demand curve (published minimum, target and maximum quantities and the price cap) is shifted right by the data-centre peak, and the new equilibrium (p^a_1, q^a_1) is found on that auction's supply curve, read from the round-by-round chart in its Final Results Report (end points match published quantities within 33 MW).[81] The household cost is

$$K_t = \theta \times [\,(1 - s_t) \cdot p_1 \cdot q_1 - p_0 \cdot q_0\,] / H_t \times 1.05, \quad s_t = L_t / (W + L_t)$$

where θ = 0.51 is households' share of Capacity Market costs (Ofgem's price-cap method: profile-class shares of winter-peak demand 0.0499 and 0.0424, peak losses 1.1475, window demand 10.68 TWh, DESNZ domestic consumption),[82] H the number of households, W average demand in the charging window (43.4 GW), and L the data centres' physical load in the window, on which they pay. The target shift is NESO's data-centre peak, 1.716 times average-load growth: 3.7 GW over the ECR's ten years to 2036/37, against 2.16 GW of average-load growth in the Ten Year Outlook over 2025 to 2036 ((23.5 – 4.6) TWh/8.76).[83] Prices are converted from each auction's CPI base to 2025 pounds.[84] Delivery years 2029/30 and 2030/31 use the 2029/30 auction (targets 39.4 and 40.9 GW against 44.1 GW bidding); 2031/32 onwards use the four auctions for 2025/26 to 2028/29 with equal weight, excluding year-cells where the shifted demand exhausts the auction's supply.[85] At measured peak (0.994 times average load) the medium figure is about £40.

A8. NETWORKS AND BALANCING

Distribution: new connected capacity ΔG_t (NESO for Medium; path energy at NESO's utilisation for Low and High) × 14.1/73 at distribution × £430/kVA (Ofgem's average), recovered as a regulated asset at 3.90% real over 45 years,[86] × households' share of distribution revenue, 46.3% (domestic net revenue £2,490m of £5,374m allowed revenue in 11 of 14 licence areas, range 41% to 54%).[87] Unit cost alternatives (SSEN's plans) give £1 to £6.

Transmission: the demand residual R = £6,265m is split between households and businesses in proportion to consumption and recovered within each through fixed site charges; households hold share 94.6/244.0 TWh = 38.76%.[88] With extra data-centre consumption d_t and new revenue ΔR_t:

$$T_t = [\,94.6 / (244.0 + d_t) \cdot (R + \Delta R_t) - 94.6 / 244.0 \cdot R\,] / H_t \times 1.05$$

81 NESO (EMR Delivery Body), Capacity Market T-4 Final Results Reports for delivery years 2018/19 to 2029/30, and Deloitte, "T-4 auction for delivery year 2029/30: Auction Monitor report", 12 March 2026. The 2029/30 auction cleared at £27.10/kW with 40,108.6 MW awarded and 3,979.8 MW exiting above the clearing price. https://assets.publishing.service.gov.uk/media/69b44fd2cf4af9cad362b41c/t-4-2025-delivery-year-2029-2030-auction-monitor-report.pdf

82 Ofgem, Energy price cap, Annex 2: wholesale cost allowance methodology, model v1.30, sheets 4a, 5b, 6a and 6d (October to December 2026 period). https://www.ofgem.gov.uk/sites/default/files/2026-08/Annex-2-wholesale-cost-allowance-methodology-v1.30_data_removed-2.xlsx

83 NESO, Electricity Capacity Report 2026, its Data Workbook and its Methodology and Assumptions Book (delivered to DESNZ 29 May 2026, published 21 July 2026). Underlying peak demand rises 14.3 GW over ten years, including "a significant increase in data centre demand (3.7 GW)" (report p.28); target response to peak demand in Data Workbook Figure A3; targets for later years in Figures A5 to A8. https://emrdeliverybody.nationalenergyso.com/IG/s/article/Electricity-Capacity-Report-ECR

84 Office for National Statistics, CPI index (D7BT), all items, 2015 = 100.

85 DESNZ, "Capacity Market auction parameters: letter from DESNZ to NESO, July 2026" (T-4 target for 2030/31 40.9 GW; price cap £75/kW/year). https://www.gov.uk/government/publications/capacity-market-auction-parameters-letter-from-desnz-to-neso-july-2026/full-details-of-auction-parameters-and-interconnector-de-rating-factors

86 Ofgem, RIIO-ED2 Final Determinations, November 2022 (allowed cost of capital 3.90% real; 45-year asset life).

87 Common Distribution Charging Methodology models for charging year 2025/26 published by Electricity North West, National Grid Electricity Distribution (four areas), SSEN (two), SP Energy Networks (two) and Northern Powergrid (two); sheets "Net revenue summary" and "General inputs". UK Power Networks' models could not be obtained.

88 NESO, "Final TNUoS Tariffs for 2026/27", January 2026, and its Tables workbook (Tables 8, 9, 17, 23, 25 and B). https://www.neso.energy/document/376336/download and https://www.neso.energy/document/376341/download

ΔR_t is revenue on £0.44m per MW (range £0.32m to £0.55m) of new transmission-connected data-centre capacity for local works,[89] plus wider reinforcement on all new capacity at NESO's London signal: (5.0 + 1.4 £/kW a year)/0.084 = £0.076m per MW, or £0.14m to £0.27m with the expansion constant recalculated under CMP315/375,[90] at the same regulatory convention (Ofgem's own figures for these projects imply a lifetime consumer cost 1.91 times capex; the convention gives 1.88). Households break even when $\Delta R_t = R \cdot d_t / 244.0$, about £754m a year by 2035 on the medium path, or roughly £12bn of transmission investment in total, converting revenue to capital at a first-year rate of 6.12% (RIIO-ED2's 3.90% real cost of capital plus depreciation over 45 years; NESO's 0.084 annuity factor would give about £9bn, and Ofgem's 1.88 lifetime ratio about £18bn); local works account for about £2.4bn of that, so about £10bn of wider reinforcement would be needed. R follows NESO's forecast of the demand residual (Five-Year View of TNUoS Tariffs 2027/28–2031/32, October 2026, Table 14: £6,265m in 2026/27 rising to £11,662m in 2031/32 in money of the day), deflated at 2% a year and held flat in real terms after 2031/32, less the medium path's data-centre works, which that forecast is taken to fund; the 244 TWh base is held at its 2026/27 level, which slightly overstates the saving. Each household is one domestic site.

Sharing of balancing and distribution charges (lower total only). Balancing: the 2026/27 BSUoS tariff pool P = £3,421m (Section 7's £3.1 billion is the 2025/26 cost) is a flat charge per unit of final demand, $B_t = -[P/(S_t - d_t) - P/S_t] \times q_t \times 1.05$.[91] Distribution: $D_t = -0.463 \times £5{,}374\text{m} \times d^D_t/(249.2 + d^D_t) / H_t \times 1.05$, where d^D_t is the distribution-connected share (14.1/73) of data-centre growth and 249.2 TWh is GB metered consumption in 2024;[92] UK Power Networks' revenue could not be obtained, so D understates the saving.

A9. UNCERTAINTY

Within each gas and interconnector case, 20,000 draws combine: weather year for each year; pass-through multiplier uniform between the structural 1.163 (losses × margin × VAT, as in A6) and 1.23, the empirical response of the price cap to wholesale costs; the model-error slope from one of the four observed calibration years (2022 to 2025); one of six leave-one-year-out price mappings; the surplus discount from the five observed annual depths. The CfD offset scales with each draw's price factor. Capacity Market auctions, distribution unit costs and the nine combinations of local and wider transmission unit costs are drawn independently. Within the central case the 90% interval is £27 to £49 for the upper total (median £36) and £8 to £29 for the lower (median £16). The central run sits near the bottom of each interval because the evidence on two inputs points upward: the observed model-error slopes average slightly above one, and the empirical pass-through (1.23) exceeds the structural multiplier. The report keeps the central run as its headline, which is therefore cautious; the executive summary and Section 8 give the medians alongside it. Gas prices, interconnection, the supply response, the Capacity Market peak treatment, the AI Growth Zone discount and CfD volumes are judgements or published scenarios without probabilities; they are shown in Table 3, not in the interval.

89 Ofgem, "RIIO-ET3 Load Re-opener, May 2026 submission window: draft determinations", eligibility assessment annex and data file, 27 August 2026 (Kingsnorth £96.7m for a 300 MW data centre; Bridgend £319.5m for up to 860 MW; Tees Dock £657.5m for a 1,400 MW AI data centre; Laleham £217.4m for five data centres, 393 MVA). https://www.ofgem.gov.uk/sites/default/files/2026-08/RIIO-ET3-load-re-opener-May-2026-submission-window-draft-determinations-eligibility-assessment-annex.pdf

90 NESO, CUSC modification proposals CMP315 and CMP375 (expansion constant and expansion factors review), Final Modification Report, 7 February 2024, figures 11 and 12, and costing note of 7 October 2019 (annuity and overhead factor 0.084). Not yet decided by Ofgem. https://www.neso.energy/document/302061/download

91 NESO, "Final BSUoS Tariffs 2026/27", December 2025, and Draft Tariffs 9 and 10, September 2026. https://www.neso.energy/document/375086/download

92 DESNZ, "Sub-national electricity consumption statistics, 2005 to 2024". https://assets.publishing.service.gov.uk/media/69426e905431f4f94d7f0b5e/Subnational_electricity_consumption_statistics_2005-2024.xlsx

A10. DISTRIBUTION ACROSS HOUSEHOLDS

Household cost is allocated by electricity use: $C_d = \bar{C} \times e_d/\bar{e}$, where e_d is mean weekly electricity spending in income decile d from ONS Family Spending Table 3.1E less the standing charge (£4.23 a week, the average direct-debit standing charge in Ofgem's price cap over April 2024 to March 2025, including VAT), and $\bar{e}$ the mean across deciles; shares use the same table's equivalised disposable income and total expenditure.[93] Electric heating uses the LCFS microdata (electrically heated households use 1.33 times the mean).[94] Regional costs scale by DESNZ average domestic consumption.[95] Fuel poverty counts are made directly in the Living Costs and Food Survey microdata: a household is counted if its fuel spending (electricity, gas, other fuels and heating oil) exceeds 10% of its income after housing costs. Each household's extra cost is the GB mean cost times its electricity use relative to the mean. A cost of a few pounds moves only a handful of sample households across the line, so the count is smoothed: it is the number of households within £200 a year below the line, per £1 of cost (about 3,200 in England, 550 in Scotland and 190 in Wales, from 79, 20 and 11 sample households; 3,950 for Great Britain), times the cost. The cost to a fuel-poor household and the change in England's fuel poverty gap apply DESNZ's published statistics to the 2030 and 2035 totals.[96]

A11. INFLATION

The direct effect is the household electricity price change times its CPI weight (2.06%). The indirect effect is a Leontief cost-push on the ONS 2023 input-output tables, $p = (I - A')^{-1} v$, with the non-domestic electricity price change as the shock to v and the CPI basket as weights.[97] A 1% rise in electricity prices raises the CPI by 0.045 percentage points in all. The report applies it to the total cost as a share of the typical bill, which assumes business electricity costs move in proportion. Global channels apply Gartner's device price changes, the ECB gas scenario and Goldman Sachs's copper decomposition to CPI weights; each is an upper bound.

93 Office for National Statistics, "Family spending in the UK: April 2024 to March 2025", workbook 1 and table 3.1E. https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/expenditure/bulletins/familyspendingintheuk/april2024tomarch2025

94 Office for National Statistics and DEFRA, Living Costs and Food Survey 2023-24, UK Data Service SN 9468 (End User Licence), processed through the household layer of the author's budget microsimulation (4,202 GB households, grossed).

95 DESNZ, "Sub-national electricity consumption statistics, 2005 to 2024". https://assets.publishing.service.gov.uk/media/69426e905431f4f94d7f0b5e/Subnational_electricity_consumption_statistics_2005-2024.xlsx

96 DESNZ, Annual Fuel Poverty Statistics in England, 2026 (2025 data).

97 Office for National Statistics, UK input-output analytical tables, 2023 (product by product), and ONS CPI weights 2026 (Annex A, tables W1 to W3).

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Federal Reserve Bank of Dallas, Working Paper 2606, March 2026, on data centres and US electricity prices; and Monitoring Analytics (PJM independent market monitor), report of 27 July 2026: data-centre load accounted for 38.2% of the 2028/29 PJM capacity auction cost.

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