The Growth Drag of High UK Electricity Prices

A Multi-Model Policy Analysis — Final Synthesis

26.63 p/kWh	-33.6%	£14–16bn
UK industrial electricity price	EII manufacturing output	Annual GDP prize

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Executive Summary

The United Kingdom pays the highest industrial electricity prices in the developed world. In 2024, UK industrial electricity cost 26.63 pence per kilowatt-hour (p/kWh) — the most expensive among all 25 IEA countries reporting data, 63% above the IEA median, nearly four times the price paid by French large industrial users, and more than four times the US industrial average. This is not a natural condition of geography or the green transition. It is the product of a specific and correctable policy architecture: a gas-heavy marginal pricing system that allows gas to set the electricity price 97% of the time, a nuclear deficit that France avoided through five decades of strategic investment, and billions of pounds in policy levies loaded onto electricity bills rather than general taxation.

The economic damage is no longer speculative. Between Q1 2021 and Q4 2024, real output in UK energy-intensive manufacturing fell 33.6%, reaching its lowest level since records began in 1990. Basic metals and castings collapsed 46.5%. Other manufacturing declined by only 6.2% over the same period — isolating an excess decline of 27.4 percentage points attributable predominantly to energy cost exposure.

This paper — synthesised from three independent analyses and a formal cross-critique process — presents reconciled consensus estimates of what the UK is forgoing. The central findings:

Metric	French Prices (£69/MWh)	US Prices (£64/MWh)	IEA Median (£163/MWh)
Direct industrial cost saving	**£16.2bn/year**	**£16.7bn/year**	**£8.5bn/year**
Annual GDP boost (central)	£14–16bn (0.5% of GDP)	£15–16bn (0.5% of GDP)	£6–8bn (0.2–0.3% of GDP)
Additional tax revenue	£5.5–6.5bn/year	£5.5–6.5bn/year	£2.5–3.5bn/year
Jobs recoverable (5-year)	80,000–150,000	80,000–150,000	40,000–80,000
Debt-to-GDP improvement (10yr)	3–5 percentage points	3–5 percentage points	1.5–3 percentage points

Over a 10-year horizon, sustained reform that raises GDP growth by 0.5 to 1.0 percentage points would generate cumulative additional output of £215–440 billion and additional tax receipts of £87–178 billion. In an economy forecast to grow at just 0.7–1.1% in 2026, this represents the most powerful supply-side lever available to the British state.

Part 1: The Price Gap

Reconciled Data

The most authoritative cross-country benchmark is the DESNZ September 2025 Quarterly Energy Prices bulletin, which draws on the IEA's standardised industrial electricity comparison for 2024. Of the 25 IEA countries reporting, the UK recorded the highest industrial electricity price including taxes. The DESNZ Table 5.3.1 workbook reports the UK at **26.63 p/kWh** and both France and the IEA median at **16.33 p/kWh** in the 2024 industrial table. The DESNZ bulletin narrative separately cites the IEA median as **15.79 p/kWh** — the discrepancy reflects different averaging methods within the same dataset. This paper uses 16.33 p/kWh (£163.3/MWh) as the primary IEA median, consistent with the workbook data table. (DESNZ September 2025 QEP[1]; DESNZ Table 5.3.1[2])

The United States did not report into the IEA's 2024 industrial table. The official EIA industrial retail price for 2024 was 8.13 US cents/kWh. Converting at the ONS annual average sterling–dollar rate of approximately 1.277 yields **6.36 p/kWh (£63.6/MWh)** — meaning UK industrial power was over four times the US level. (EIA Table 4[3]; ONS AUSS exchange rate[4])

France requires careful treatment because two different price concepts circulate. The DESNZ IEA table shows France at 16.33 p/kWh — a broad statistical average. But the UK government's own July 2025 EII competitiveness consultation uses a benchmark of **£69/MWh** for large French industrial users benefiting from regulated nuclear pricing — alongside Germany at £60/MWh, and GB at £168/MWh without Supercharger support, £93/MWh with current support, and £86/MWh with proposed 90% network compensation. For counterfactual policy analysis, £69/MWh is the more relevant French benchmark, while the DESNZ series establishes the broader statistical fact. (UK government EII consultation[5]; DESNZ Table 5.3.1[2])

The 2025 picture did not materially improve. DESNZ reported average UK non-domestic electricity prices including taxes and levies of 26.70 p/kWh in January–June 2025. (DESNZ December 2025 QEP[6])

When the Gap Opened

Britain was already expensive before the gas shock. Ofgem's retrospective study found GB had historically high electricity prices for energy-intensive industries between 2016 and 2020, with average day-ahead wholesale prices of £46/MWh in GB versus £39/MWh in France, £36/MWh in the Netherlands, and £34/MWh in Germany. The 2021–24 gas crisis then converted a structural disadvantage into an emergency: ONS records average UK non-domestic electricity prices rising from 14.81 p/kWh in Q1 2021 to a peak of 28.39 p/kWh in Q4 2023, settling at 25.97 p/kWh by Q4 2024 — still 75% above the start of 2021. (Ofgem EII research[7]; ONS energy costs article[8])

The result is a three-layered competitiveness wedge: the UK stands above the IEA median; far above France and Germany for protected large users; and dramatically above the US. This is not price volatility. It is a structural cost penalty.

Part 2: How Britain Got Here

The Three Structural Failures

The dash for gas and marginal pricing. Since the 1990s, the UK's electricity market has been dominated by gas-fired generation. UCL summarises the legacy: "since 2000, UK wholesale electricity prices have been mainly determined by the cost of operating gas plants built in the 1990s." In the UK's merit-order auction, the last plant needed to clear demand sets the price for all power. Gas-fired stations generated 43% of UK electricity in 2021 but set the system price 97% of the time. Even when wind, solar, and nuclear supply the majority of electrons, the price reflects gas economics. In France, gas sets the price only 7% of the time. (UCL industrial electricity report[9]; ONS energy costs article[8]; Nuclear Industry Association[10])

The nuclear deficit. France made a decisive bet on nuclear after the 1973 oil crisis, constructing 56 reactors between 1974 and 1991. Today, nuclear provides 65–75% of French electricity at an operating cost of approximately €60/MWh, with capital largely amortised. Britain, which once led the world in nuclear, has not completed a commercial reactor since Sizewell B in 1995. By 2023, nuclear provided just 14% of UK electricity. The consequence: gas remains the structurally dominant price-setter in a way that is impossible in France. (Nuclear Industry Association[10]; EDF consultation note[11])

Policy cost loading. Ofgem identifies three drivers of GB's industrial price premium: higher wholesale prices from gas dependence, higher policy costs even after reliefs, and higher network charges with shallower industrial discounts than continental peers. UK non-domestic electricity bills carry approximately £76/MWh in policy costs — including the Renewables Obligation (~£7.7bn), Feed-in Tariffs (£1.86bn), Capacity Market payments (£1.25bn), NESO balancing services (£892m), plus the Climate Change Levy and Carbon Price Support. These should not be mechanically summed, as they overlap with reliefs and timing mechanisms, but they demonstrate a multi-billion-pound structure of charges layered atop a gas-linked wholesale price. In France and Germany, equivalent costs are funded more heavily through general taxation or offset by far deeper industrial exemptions — often covering 90% or more of charges for qualifying firms. (Ofgem EII research[7]; Ofgem RO obligation[12]; Ofgem FIT annual report[13]; LCCC and ESC annual reports[14]; NESO balancing spend[15]; UCL industrial electricity report[9])

The UK's Carbon Price Support adds approximately £6.60/MWh every time gas fires, flowing through to all buyers. Its original purpose — accelerating the shift from coal to gas — has been achieved. Coal is gone. The CPS now functions primarily as an additional cost amplifier in a gas-dominated market. (Centre for British Progress[16])

In short, Britain did not get expensive electricity because it decarbonised too aggressively. It got expensive electricity because it decarbonised into a market design still dominated by gas at the margin, while France decarbonised into a system where cheap amortised nuclear sets the anchor.

Part 3: The Damage Already Done

The ONS Evidence

The official data are severe. The ONS's May 2025 analysis — the most authoritative assessment — identifies four groups of energy-intensive manufacturing: paper and paper products, petrochemicals, basic metals and castings, and inorganic non-metallic products (glass, ceramics, cement). Between Q1 2021 and Q4 2024:

Sector	GVA Decline
Basic metals and castings	**−46.5%**
Inorganic non-metallic products	**−30.6%**
Petrochemicals	**−30.2%**
Paper and paper products	**−28.9%**
All EIIs (aggregate)	**−33.6%**
Other manufactures (comparator)	−6.2%
Services output	+16.4%

Source: ONS, "The impact of higher energy costs on UK businesses: 2021 to 2024"

By Q4 2024, the output index for manufacturing EIIs was at its lowest point since the series began in 1990 — a 35-year low. The 27.4 percentage-point excess decline relative to non-EII manufacturing isolates the energy-specific drag. While global factors — Chinese steel overcapacity, post-COVID supply chain shifts, construction slowdowns — undoubtedly contributed, the timing, concentration, and magnitude of the collapse in internationally exposed heavy industry, coinciding with the electricity price spike, make a pure structural-change explanation implausible.

The Scale of Exposure

The government's own EII consultation quantifies the sectors at risk: eligible EII industries employ approximately 400,000 workers, generate £32.8 billion in gross value added (3.6% of GDP), produce turnover of roughly £155 billion, and account for around 28% of total UK exports. (UK government EII consultation[5])

Broader energy-use data reinforce the picture. DUKES reports industrial electricity consumption at 82.2 TWh in 2024 — down 2.8% year-on-year and at its lowest since 1998. Industrial final energy consumption fell to 19.5 million tonnes of oil equivalent in 2024, the lowest for more than 50 years. Per capita electricity consumption has fallen 33% since 2005. Some of this reflects genuine efficiency gains and structural change, but the sharp post-2021 acceleration, concentrated in trade-exposed heavy industry, is primarily demand destruction. (DUKES 2025 Chapter 5[17]; ECUK 2025[18])

What It Looks Like on the Ground

UK steel production fell from 5.6 million tonnes in 2023 to 4.0 million tonnes in 2024 — a 29% decline in a single year. Tata closed Port Talbot's last blast furnaces, citing losses of £1 million per day. The transition to electric arc furnaces — which government policy demands — is made far harder when a plant consuming 1 TWh per year pays £266 million at UK prices versus £69 million in France: a differential of £197 million annually, almost entirely a product of regulatory design. (Carbon Brief 2025 analysis[19])

Part 4: The Fiscal Cost of Failure

The UK's high electricity prices do not merely shrink the industrial base; they erode the tax base. The government receives less corporation tax, less income tax, less National Insurance, and less VAT as factories close, workers are made redundant, and production moves overseas. On the government's own figures, the EII sectors at risk generate £32.8 billion in GVA and employ 400,000 workers. A 33.6% contraction in that output base represents roughly £11 billion in lost annual GVA — before accounting for supply-chain multipliers.

At the same time, fiscal headroom is constrained. The OBR's March 2026 forecast shows public sector net debt approaching 96% of GDP, with net borrowing at 5.2% of GDP in 2024–25. Interest payments on that debt consume an increasing share of revenue. In this environment, any reform that raises the growth trajectory mechanically improves the debt ratio through a larger GDP denominator — even without reducing the nominal debt stock. (OBR March 2026 EFO[20])

The fiscal arithmetic of inaction is this: the Treasury retains roughly £10–13 billion in policy levies collected through electricity bills while simultaneously forgoing multiples of that sum in lost output, lost tax receipts, and increased welfare spending. That is not fiscal prudence. It is a false economy.

Part 5: Three Counterfactual Scenarios

Methodology

This paper's consensus estimates combine the strongest analytical elements from the panel:

- **Physical cost base:** DUKES 2024 industrial electricity consumption of **82.2 TWh** and the UK industrial price of **26.63 p/kWh (£266.3/MWh)** from the DESNZ Table 5.3.1 workbook.
- **GDP multiplier:** The **Make UK/Oxford Economics empirical estimate** that every £10/MWh reduction in manufacturing electricity bills generates a sustained **£800 million annual GDP boost** and **£300 million in additional tax revenue**. This uses OBR modelling methodology and is the only published, externally validated multiplier available. (Make UK, June 2025[21])
- **Cross-check:** A pass-through range of **0.72x to 1.20x** from direct cost savings to GDP, with diminishing returns applied at extreme price reductions to account for grid capacity constraints, labour supply limits, and the time required for shuttered capacity to restart.

- **Tax receipts ratio:** The OBR figure of **40.5%** of national income as current receipts in 2025–26. (OBR public finances guide[22])
- **GDP base:** Nominal GDP of approximately **£3.075 trillion**, annualised from ONS Q4 2025 data. (ONS GDP bulletin[23])

Important caveat on linearity. The Make UK multiplier was derived from modelling marginal price reductions. Scaling it linearly to a £197/MWh price cut (to reach French levels) implicitly assumes that the macroeconomic response is constant across the full range. In practice, non-linearities are certain: grid connection bottlenecks, skilled labour shortages, and the time lag for decommissioned capacity to restart would dampen the marginal return of the final increments. The central estimates therefore apply the Make UK multiplier as an upper-bound framework and use the cross-check range to produce a plausible interval.

Scenario A: French Large-User Benchmark (£69/MWh)

Price reduction: £266.3   £69.0/MWh = £197.3/MWh (74.1% cut)

Direct industrial cost saving: 82.2 million MWh × £197.3/MWh = **£16.2 billion per year**

GDP impact:

- Make UK multiplier: (£197.3 ÷ £10) × £800m = £15.8bn (upper bound)
- Cross-check range (0.72x–1.00x of direct saving, with taper): £11.7bn–£16.2bn
- **Consensus central estimate: £14–16 billion per year (0.45–0.52% of GDP)**

Additional tax revenue: £14–16bn × 40.5% = **£5.7–6.5 billion per year**

Demand response: At a long-run price elasticity of −0.35 (Espey & Espey meta-analysis), a 74% price cut implies approximately 26% higher industrial electricity demand in the long run — an additional ~21 TWh, which would require significant grid investment and new generation capacity. (Espey and Espey[24])

Scenario B: US Benchmark (£63.6/MWh)

Price reduction: £266.3   £63.6/MWh = £202.7/MWh (76.1% cut)

Direct industrial cost saving: 82.2m MWh × £202.7/MWh = **£16.7 billion per year**

GDP impact:

- Make UK multiplier: (£202.7 ÷ £10) × £800m = £16.2bn (upper bound)
- Cross-check range: £12.0bn–£16.7bn
- **Consensus central estimate: £15–16 billion per year (0.49–0.52% of GDP)**

Additional tax revenue: £5.7–6.5 billion per year

The US and French scenarios produce near-identical results because the two benchmark prices are only £5.4/MWh apart. The policy pathways differ — the US advantage derives from abundant domestic shale gas and the Inflation Reduction Act, while France's derives from nuclear baseload — but the economic prize is comparable.

Scenario C: IEA Median (£163.3/MWh)

Price reduction: £266.3 £163.3/MWh = £103.0/MWh (38.7% cut)

Direct industrial cost saving: 82.2m MWh × £103.0/MWh = **£8.5 billion per year**

GDP impact:

- Make UK multiplier: (£103.0 ÷ £10) × £800m = £8.2bn
- Cross-check range: £6.1bn–£8.5bn
- **Consensus central estimate: £6–8 billion per year (0.2–0.3% of GDP)**

Additional tax revenue: £2.5–3.5 billion per year

This scenario is the most immediately achievable. The £103/MWh reduction approximately corresponds to removing the full £76/MWh of policy costs currently on non-domestic bills plus modest wholesale market reforms. It does not require new baseload capacity and could be substantially achieved within 2–4 years through fiscal and regulatory action alone.

Consensus Summary Table

Metric	Scenario A: France	Scenario B: US	Scenario C: IEA Median
Target price (£/MWh)	69	64	163
Price cut (%)	74%	76%	39%
Direct industrial saving	**£16.2bn**	**£16.7bn**	**£8.5bn**
Annual GDP boost (central)	**£14–16bn**	**£15–16bn**	**£6–8bn**
Annual extra tax revenue	£5.7–6.5bn	£5.7–6.5bn	£2.5–3.5bn
Recoverable jobs (5-year)	80k–150k	80k–150k	40k–80k
Achievable timeframe	10–15 years	10–15 years (aspirational)	**2–4 years**

The jobs range uses two methods: the Make UK multiplier scaled by manufacturing labour intensity (lower bound), and the GDP uplift divided by average payrolled-employee productivity of ~£101,500 (upper bound, a scale indicator rather than a forecast).

Part 6: The Wider Drag

Blocked Electrification

The Climate Change Committee identifies the ratio of industrial electricity to gas prices — above 4:1 — as a primary barrier to industrial electrification. It says removing policy costs from electricity could reduce the domestic ratio from around 4:1 to between 2:1 and 3:1. This matters because the economics of heat pumps require an electricity-to-gas ratio below approximately 3.1:1 to break even on running costs. At 4.2:1, **operating a heat pump costs more than running a gas boiler** — the opposite of the economic case for electrification. In France, where the ratio is near parity, heat pumps are economically compelling. (CCC 2025 Progress Report[25])

This is the central paradox: Britain has decarbonised the grid enough that electrification should be the growth path, yet it still prices electricity as if it were a scarce premium fuel.

The AI and Data Centre Penalty

techUK warns that delays in grid connections, unpredictable energy costs, and inadequate planning are driving data-centre investment away from Britain. Data centres bear the full brunt of transmission, network, and policy costs without qualifying for EII exemptions. A hyperscale facility consuming 1 TWh per year faces annual electricity costs of £266 million at UK prices versus £69 million in France — a penalty of £197 million per year. Over a 15-year facility life, the cumulative differential exceeds £2.9 billion for a single campus. Oxford Economics projects UK data centre electricity demand could reach 26.2 TWh by 2030. At UK prices, that is a £7.0 billion annual bill; at French prices, £1.8 billion. (techUK[26]; Oxford Economics[27])

The Global Subsidy Race

The UK is not competing in a vacuum. The US Inflation Reduction Act provides up to $370 billion in clean energy tax credits and production subsidies, fundamentally altering the investment calculus for energy-intensive manufacturing and technology infrastructure. The EU’s Net Zero Industry Act similarly accelerates clean industry deployment. A UK price cut that merely closes the gap on raw electricity costs may no longer be sufficient if competitor nations are simultaneously offering capital grants, production tax credits, and accelerated permitting. The UK needs both price reform and an active industrial strategy to compete for mobile capital that has already begun sinking roots in Texas, Ohio, and northern France.

Carbon Leakage

High prices are environmentally self-defeating. When UK steelworks close, the production does not vanish — it offshores. UK steel output fell 29% in 2024, immediately accompanied by a 1.3 million tonne increase in steel imports. Those imports are produced somewhere, often in blast furnaces operating with higher carbon intensity. The UK counts the emission reduction in its national accounts; global emissions rise. The government’s own EII consultation warns explicitly that high electricity prices raise the risk of import dependence and carbon leakage. (Carbon Brief[19]; UK government EII consultation[5])

Part 7: What France Did Right — And What Britain Can Still Do

The French Model

France's advantage is not one policy but a system strategy. It invested early and at massive scale in nuclear baseload, preserved a state-backed national champion (EDF), and built industrial pricing that reflects the economics of low-variable-cost generation rather than daily gas scarcity. The post-ARENH framework — the Universal Nuclear Payment (VNU) system from January 2026 — preserves this through 4–5 year market contracts, industrial partnership contracts backed by nuclear plants, and a clawback on legacy nuclear revenues above €78/MWh (then €110/MWh) to recycle excess rents to consumers. The French government estimates EDF's nuclear production cost at €60.30/MWh for 2026–2028. (EDF consultation note[11]; NUS Consulting[28])

The UK Reform Agenda

Britain cannot recreate the French system overnight. But the UK government's own consultation data show that existing policy levers already compress GB benchmark industrial prices from £168/MWh to £93/MWh with Supercharger support, and proposed reforms would lower that to £86/MWh. A large share of the competitiveness problem is addressable within the current framework. (UK government EII consultation[5])

Near-term (1–3 years):

1. Shift policy costs from electricity bills to general taxation — the approximately £76/MWh in levies that the Chemical Industries Association identifies. Energy UK estimates this could reduce non-domestic prices by ~£40/MWh — about half the IEA-median gap.

2. Remove or suspend Carbon Price Support, whose coal-elimination purpose has been achieved. This would reduce wholesale prices by approximately £6.60/MWh immediately.

3. Extend and deepen the Supercharger framework: move network charging compensation from 60% to the proposed 90%, and widen eligibility beyond current EII categories to include data centres and other strategically important electricity users.

Medium-term (3–8 years):

4. Reform the wholesale market through REMA to decouple low-carbon generation from gas marginal pricing. Options include green power pools, split markets, or demand-side Contracts for Difference for large industrial users (Make UK proposes a £56/MWh demand-side CfD).

5. Maximise interconnection with continental grids to access cheaper French nuclear electricity as an interim measure.

Long-term (8+ years):

6. Deliver new low-carbon firm capacity at scale — Sizewell C, Small Modular Reactors, long-duration storage — so that the reform is durable rather than merely redistributive. Without new baseload, price reform risks redistributing scarcity rather than ending it.

The sequencing matters. Immediate policy cost reform buys time while structural generation change is delivered.

Part 8: Growth Arithmetic

The Compounding Effect

The OBR's March 2026 forecast expects real GDP growth to slow to 1.1% in 2026; KPMG projects 0.7%, explicitly linking the weaker outlook to energy price headwinds. Nominal GDP stands at approximately £3.075 trillion (annualised from ONS Q4 2025). (OBR March 2026 EFO[20]; KPMG UK outlook[29]; ONS GDP bulletin[23])

If electricity price reform raised nominal GDP growth by 0.5 to 1.0 percentage points per year — capturing industrial retention, faster electrification, and higher investment — the compounding effects are transformative:

Horizon	Baseline GDP	GDP with +0.5pp	Cumulative Gain	GDP with +1.0pp	Cumulative Gain
5 years	£3.65tn	£3.74tn	**£89bn**	£3.83tn	**£180bn**
10 years	£4.34tn	£4.55tn	**£214bn**	£4.78tn	**£438bn**

Fiscal effects: Using the OBR receipts ratio of 40.5%:

Horizon	Annual extra revenue (+0.5pp)	Annual extra revenue (+1.0pp)
5 years	**£36bn**	**£73bn**
10 years	**£87bn**	**£177bn**

Debt-to-GDP improvement: Against a baseline of approximately 95% debt-to-GDP, holding the nominal debt stock constant, the higher GDP denominator reduces the ratio by approximately 2–3 percentage points after five years (+0.5pp scenario) and 4–5 percentage points (+1.0pp scenario). After ten years: 4–5 and 8–9 percentage points respectively.

These numbers should not be read as forecasts. They illustrate the power of compounding: a reform that genuinely shifts the UK onto a modestly higher growth path produces fiscal and living-standard payoffs that become very large surprisingly quickly.

Part 9: What Changes For You

For a Typical Household

A UK household consuming 3,400 kWh per year currently pays approximately £1,010 for electricity at the domestic rate of 29.74 p/kWh. At French domestic equivalent rates (~18.4 p/kWh from Eurostat), the bill would be approximately £626 — a saving of **£385 per year**. Across 28.6 million UK households, that represents roughly £11 billion in aggregate household electricity savings. For households with heat pumps, the savings are larger still: the CCC estimates removing policy costs from electricity bills would save £490 per year for heat pump households versus £190 for gas boiler households. (ONS households data[30])

For a Small Business

A small business consuming 50,000 kWh per year currently pays approximately £13,300 for electricity. At French industrial prices, the equivalent would be £3,450 — a saving of **£9,850 per year**. For many SMEs in retail, hospitality, or light manufacturing, this is the difference between profitability and closure.

For a Factory

An electric arc furnace steelworks consuming 1 TWh per year pays £266 million at UK prices. The same plant in France pays £69 million — a differential of **£197 million annually**. That single cost difference exceeds the total UK subsidies available to most EII firms. It explains why the transition from blast furnaces to electric arc furnaces — the cornerstone of UK steel decarbonisation strategy — faces an economic headwind that does not exist in France.

For AI and Data Centre Investment

A hyperscale data centre consuming 1 TWh annually faces a UK electricity bill of £266 million versus £69 million in France. Over a 15-year facility life, the cumulative electricity cost penalty is **£2.9 billion** for a single campus. For a technology company choosing between London, Paris, and Dublin for its European AI infrastructure, this is not a marginal consideration — it is a decisive one.

For the Nation

Under the central reform scenario, the per-household equivalent of the additional annual GDP after five years is approximately £3,100 (+0.5pp) to £6,300 (+1.0pp). After ten years: £7,500 to £15,300 per household. These are not direct transfers, but they represent the additional national wealth — in wages, profits, public services, and investment — that a structurally cheaper electricity system would generate.

Part 10: Counter-Arguments and Limitations

An honest analysis must engage with the strongest objections.

"High prices are the necessary cost of net zero." The UK's early renewable deployment was successful, but the funding mechanism — loading subsidy costs onto electricity bills — is now self-defeating. It raises the price of the very energy source (electricity) that the transition requires everyone to use more of. Moving subsidies from bills to general taxation does not reduce the revenue available to clean energy generators; it changes who pays and how. The CCC identifies this shift as its highest-priority recommendation. Furthermore, if high prices simply offshore production to higher-carbon jurisdictions, global emissions rise while UK emissions fall only on paper.

“Gas is necessary for system stability.” True in the short run, but the mechanism of paying gas generators the clearing price for all electricity — including the 50%+ produced by low-marginal-cost renewables and nuclear — is a market design flaw, not an inevitability. France maintains system stability with nuclear baseload and hydro, rarely relying on gas to set the price. The UK could compensate gas generators through capacity payments, strategic reserves, or availability contracts without allowing them to set the price for every electron 97% of the time.

“The Treasury cannot afford to cut prices.” Removing policy costs from bills and funding them through general taxation implies a £10–16 billion annual fiscal transfer. This is real and should not be minimised. But the comparison is not between spending and not spending. It is between spending £13 billion to enable £14–16 billion in annual GDP growth — a return that any Treasury model would endorse — versus the status quo of watching output contract, investment flow overseas, and the tax base erode. Static fiscal scoring that ignores the macroeconomic feedback loop is analytically indefensible in this context.

“Nuclear cannot be built quickly enough.” True as a short-run constraint. Hinkley Point C is not expected to produce power before 2029–31 at the earliest. But the near-term reform agenda — policy cost transfer, CPS reform, deeper Supercharger exemptions — does not require waiting for new nuclear. The IEA-median scenario is achievable within the current generation mix. Long-run structural reform and near-term pricing reform are complements, not substitutes.

“The EII collapse is about global oversupply, not UK electricity.” Chinese steel overcapacity and chemicals demand weakness are real. But these global forces compress margins everywhere — making the energy cost differential more, not less, consequential. A producer operating at thin margins can survive where electricity costs £69/MWh; it cannot survive at £266/MWh. The 27.4 percentage-point excess decline of EIIs versus non-EII manufacturing — sectors without comparable energy exposure — indicates that electricity prices are a significant independent variable.

“Grid constraints would prevent the demand response.” This is the most underappreciated limitation. If electricity prices fell 74% and industrial demand rose by the elasticity-implied 26%, the UK grid — where new connections routinely face 5–10 year delays — would not accommodate the growth immediately. The demand response would be phased over years, not instantaneous. This is why the central estimates should be understood as medium-term potential rather than immediate gains, and why grid investment must accompany price reform.

Analytical Limitations

All estimates in this paper are subject to meaningful uncertainty. The Make UK multiplier was calibrated for marginal manufacturing price changes, not extreme market-wide restructuring. The cost-saving-to-GDP translation involves judgments about pass-through rates, investment lag, and labour supply. The 33.6% EII output decline has not been formally decomposed between energy costs and other causes — the energy attribution, while strongly supported by the pattern of evidence, is indicative rather than econometrically proven. All figures should be read as orders of magnitude and directional guidance for policy, not as point forecasts.

Part 11: Conclusions and Recommendations

Britain's high electricity prices are not an unavoidable by-product of the energy transition. They are the product of a specific, correctable policy mix: a gas-dominated marginal pricing system, policy costs loaded onto bills, relatively shallow industrial relief, and a 30-year failure to replace lost nuclear baseload. The damage is already embedded in the national accounts: a 33.6% collapse in energy-intensive manufacturing, industrial electricity consumption at a 26-year low, and evidence from government, industry, and the Climate Change Committee that high prices are simultaneously killing existing industry, blocking electrification, and deterring the next generation of AI and clean technology investment.

The reconciled evidence from this analysis points to a clear conclusion. Closing the electricity price gap to French or US levels would deliver annual GDP gains of £14–16 billion, additional tax revenues of £5.5–6.5 billion per year, and the recovery of 80,000–150,000 jobs over five years. Even the more modest target of reaching the IEA median — achievable through policy cost reform alone within 2–4 years — would generate £6–8 billion in annual GDP gains and £2.5–3.5 billion in extra tax revenue. Over a decade, a sustained 0.5–1.0 percentage point growth boost compounds into £215–440 billion in additional output.

The policy priorities, in sequence:

1. **Immediately:** Transfer policy levies from electricity bills to general taxation. Remove or suspend Carbon Price Support. Extend Supercharger exemptions to 90% network compensation and widen eligibility.
2. **Within 3–5 years:** Reform the wholesale market to decouple low-carbon generation from gas marginal pricing. Introduce demand-side CfDs for strategic industrial users. Maximise continental interconnection.
3. **Within 10 years:** Deliver new low-carbon firm capacity — Sizewell C, SMRs, long-duration storage — to make the price reform structurally durable.
4. **Throughout:** Invest in grid capacity and connections to accommodate the demand growth that cheaper electricity will unlock.

The strategic test for UK energy policy is not whether it can produce another consultation. It is whether it can make power cheap enough, stable enough, and abundant enough that firms once again choose Britain as the place to make things, electrify processes, and build the next generation of energy-hungry infrastructure. France has shown that such a system is possible. The US has shown that subsidies can accelerate it. The UK still has the policy room to build its own version — but the economic cost of delay is now visible in the national accounts, and it compounds with every quarter of inaction.

Panel Reconciliation Notes

This paper was synthesised from three independent analyses (designated Models A, B, and C) and a formal cross-critique process. The following records where the models agreed, where they disagreed, and how disputes were resolved.

Areas of Full Agreement

All three models converged on: the UK's position as the highest-price IEA country; the 33.6% EII output collapse (ONS data); the structural causes (gas marginal pricing, nuclear deficit, policy cost loading); the blocked-electrification paradox; and the broad policy direction (shift levies, reform wholesale markets, build baseload).

Resolved Data Disputes

Disputed Item	Model A (GPT)	Model B (Claude)	Model C (Gemini)	Resolution
UK industrial price	26.63 p/kWh	25.33 p/kWh	25.33 p/kWh	**26.63 p/kWh adopted.** Model A's figure is the full-year 2024 IEA comparison from DESNZ Table 5.3.1.
IEA median	16.33 p/kWh (workbook) and 15.79 (bulletin)	17.35 p/kWh	15.79 p/kWh	**16.33 p/kWh adopted** from the DESNZ workbook data table. Model B's 17.35 could not be verified.
Consumption base	82.2 TWh (DUKES)	36 TWh (mfg) / 170 TWh (non-dom)	~70.7 TWh (implied)	**82.2 TWh adopted.** DUKES provides the authoritative industrial electricity series.
Direct saving (French)	£16.22bn	£9.1bn (mfg) / £32bn (non-dom)	£13.02bn	**£16.2bn adopted.** Model B's £9.1bn contained an arithmetic error.
GDP multiplier	0.72x–1.20x pass-through	Make UK: £800m per £10/MWh	Unsourced 0.5–1.0pp	**Make UK multiplier adopted** as primary framework. Model A's range used as cross-check.
Tax-to-GDP ratio	40.5% (OBR)	~37%	33%	**40.5% adopted** per OBR 2025–26 verified figure.
GDP base	~£3.075tn	~£2.8tn	£2.3tn	**£3.075tn adopted** from ONS Q4 2025 annualised. Model C's £2.3tn was materially wrong.
ONS subsector declines	Paper −28.9%, petrochem −30.2%, minerals −30.6%, metals −46.5%	Same as Model A	Non-ferrous metals −34.9%, electrical −49.2%, chemicals −38.3%	**Models A and B confirmed correct.** Model C's figures could not be reconciled with the ONS source.

Methodological Reconciliation

- **Model A (GPT)** was judged the strongest on data sourcing, price arithmetic, and comparator discipline. Its distinction between France's statistical tariff and large-user policy benchmark was adopted as the analytical framework.
- **Model B (Claude)** provided the most empirically grounded GDP translation through the Make UK multiplier approach, and the richest policy narrative. Its triangulated methodology (three independent estimation methods) informed the cross-checking approach.
- **Model C (Gemini)** contributed the strongest counter-argument structure (explicitly addressing Treasury, security, and subsidy objections) and the clearest articulation of the global subsidy race (US IRA, EU NZIA). Its qualitative framing of the electrification paradox and AI investment penalty was incorporated.

Shared Gaps Addressed

All three papers underplayed: grid capacity constraints on the demand response (now addressed in Part 10); the mechanics of wholesale market reform (addressed in Part 7); the global subsidy race as a competitive factor beyond raw price (addressed in Part 6); and the fiscal cost of transition (addressed in Parts 4 and 10). The attribution of the 33.6% EII decline to electricity costs is presented throughout as strongly indicated by the pattern of evidence rather than econometrically proven — a more careful framing than any individual model used.

Sources: All data points are cited inline to primary official sources including DESNZ, ONS, OBR, DUKES, EIA, Ofgem, the UK government's EII consultation, the Climate Change Committee, Make UK, UCL, and the Nuclear Industry Association. Full URLs are provided at each citation point.

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