STARTUP C*ALITION

AI Vision for Energy

Startup Coalition's response to the DESNZ call for evidence on their Vision for the use of Ai in the energy sector.

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About Startup Coalition

The Startup Coalition, formerly The Coalition for a Digital Economy (Coadec), is an independent advocacy group that serves as the policy voice for Britain's technology-led startups and scale-ups.

We were founded in 2010 by Mike Butcher, Editor-at-Large of technology news publisher TechCrunch, and Jeff Lynn, Chairman and Co-Founder of online investment platform Seedrs. We fight for a policy environment that enables early-stage British technology companies to grow, scale and compete globally.

We have over 4000 startups, scale-ups and investors in our network and have been instrumental in building proactive coalitions of businesses and investors on issues that are integral to the health of the UK's startup ecosystem. Our recent work has seen many successes, from the establishment of the Future Fund to the creation of the Scaleup visa.

Executive Summary

Britain is building a decentralised energy system faster than it is learning to run one. Heat pumps, EVs, home batteries and plug-in solar are arriving in homes at scale. Wind farms are paid to switch off while demand sits idle behind the same constraint. The connections queue holds back gigawatts of generation, storage and demand. AI can coordinate all of this, but only if the firms building it can get to market.

The Government's Vision for an AI-enabled clean energy system rests on three principles: lower bills, efficiency and decarbonisation, and security. We support all three, and add a fourth: competition and innovation. AI reaches consumers fastest when many firms compete to deliver it, not when a few incumbents control the data and the routes to market. Every intervention should be tested against one question: does it widen or narrow the field of firms able to innovate in the energy system?

The UK starts from a strong position. Its competitive retail market has already produced energy software platforms exported worldwide. It has an independent system operator, advanced flexibility markets and world-class AI research. Our advantage when applying AI to the energy sector today is not hardware, but the software, data and market-design layer that sits on top of a decentralised grid. That advantage holds only if the UK is the easiest place to deploy these products. If startups prove their products here but scale elsewhere, Britain loses the industrial prize.

Today it is not the easiest place to do this though. Startups in our network report the same barriers again and again:

- **Data is locked away.** The dataset that matters most, half-hourly consumption joined to the devices behind the meter, does not exist. Investment in UK Open Energy startups has never exceeded £16m a year, against a peak of £836m for Open Banking and Open Finance.

- **The regulator has not prioritised innovation.** The FCA's sandbox received 142 applications in 2025/26 alone. Ofgem's sandbox page records no new sandboxes in four years.

- **Pilots do not become products.** Networks are funded to trial, not to adopt, and are rarely rewarded when AI or flexibility avoids reinforcement.

- **New rules risk penalising smarter optimisation.** The Smart Secure Electricity Systems regime, as drafted, could capture AI-driven products that simple incumbent tariffs escape.

- **Markets do not yet pay for flexibility by place and time.** Constraint payments have already passed £1bn this year.

This report captures our response to the UK Government’s November 2026 call for evidence on its Vision for an AI-enabled clean energy system. In it, we set out 20 recommendations across six areas:

1. Open data
2. Regulatory culture
3. Pilot-to-production
4. Market design and flexibility

5. Household control
6. Agents, assurance, and risk

Taken and acted on together, we contend that this blueprint would make the UK the place where energy AI is tested, proven and scaled first, and where the benefits show up as pounds off bills and gigawatts connected.

Summary of Recommendations

Open Energy: fixing the data foundations

Recommendation 1: The Government should legislate for Open Energy on the Open Banking model, with authorised third parties and cross-recognition for firms already authorised for Open Banking data.

Recommendation 2: The Government should start building the missing dataset now, linking MCS, EPC, DNO and OZEV records at MPAN level, and treat it as national infrastructure.

Recommendation 3: The ICO should clarify the rules on third-party access to energy data.

A regulator built for innovation

Recommendation 4: The Strategy should set Ofgem a clear expectation to match the FCA's ambition on innovation, backed by annual published sandbox figures.

Recommendation 5: Ofgem should launch the Future Regulation Sandbox without further delay, with a defined route from successful trial to permanent rule change.

Recommendation 6: The Government should create a single front door for energy innovators across the Ofgem AI Reg Lab, Technical Sandbox, NESO and DESNZ.

Recommendation 7: Ofgem, NESO and DESNZ should deploy AI across their own operations, including a regulator-run AI that tells innovators which rules apply to them.

From pilot to production

Recommendation 8: Successful funded innovation projects should be adopted as business as usual, or networks should publish why not.

Recommendation 9: Network incentives should reward outcomes: avoided reinforcement, lower constraint costs and faster connections.

Recommendation 10: Network procurement should be made startup-friendly, with proportionate thresholds, liability caps and insurance requirements.

Recommendation 11: Price controls should include mid-period reopeners so proven AI solutions do not wait for the next cycle.

Markets that value flexibility

Recommendation 12: NESO and the DNOs should adopt standardised flexibility products and a common, API-based procurement interface.

Recommendation 13: The Government should introduce constraint markets, connection auctions and thermal headroom markets, and back AI-assisted headroom assessment and flexible connections.

Recommendation 14: Market rules, tariffs and data should be published in machine-readable form.

Recommendation 15: Market surveillance should be equipped to detect algorithmic herding and tacit coordination, building on existing REMIT powers.

Putting households in control

Recommendation 16: The Government and Ofgem should make the Smart Secure Electricity Systems regime proportionate, including a provisional licence route to market.

Recommendation 17: The energy Smart Data scheme should plan for authorised agents to act on a household's behalf, modelled on payment initiation in Open Banking.

Recommendation 18: The Government should finish the job on household flexibility: plug-in solar to a hard deadline, legal plug-in batteries and an end to the double charging of home storage.

Safe autonomy

Recommendation 19: System-level assurance should be built on clear accountability and scaled to risk, with shared observability standards, open test environments and safe fallback modes.

Recommendation 20: Autonomy should be staged by the criticality of the decision, and concentration risk met with interoperability and competition policy, not national champions.

A Sector worth Backing

Britain already has the companies to build an AI-enabled clean energy system. The question is whether they get to do it here.

Startup Coalition's 2026 ClimateTech Index, produced with Beauhurst, tracks the UK's 1,000 best-funded venture-backed ClimateTech companies. Together they are worth **£42bn**, have raised **£22bn** and employ more than **24,000 people**. They sit within a net zero economy that generates £105bn in gross value added and 1.1 million jobs, in work that is 48% more productive than the UK average. Funding into Index firms grew 17% between 2024 and 2025, and 118 firms have now exited.

Energy is the engine. Energy accounts for a third of Index firms (328), but around half of all capital raised (£10.5bn) and of total value (£22.4bn). These are firms building the software, devices and market platforms that an AI-enabled system depends on: forecasting, flexibility, home energy management and grid optimisation.

AI demand is creating a new strength. There is a growing cohort of firms in the UK decarbonising data centres. Several of them, including Deep Green, DataGlow and Heata, give the UK a distinctive strength in reusing waste heat. Data-centre demand does not have to threaten decarbonisation. As an anchor customer it can make renewable build-out bankable, and as flexible demand it can absorb power that would otherwise be curtailed. Curtailment cost billpayers close to £1.5bn in 2025 and could reach £4-8bn a year by 2030.

This is growth in every region. 69% of EnergyTech firms, 49% of capital raised and 67% of jobs sit outside London, much of it in the post-industrial and coastal economy.

But the warning lights are on. Sixty per cent of energy firms are stuck at Series A, and 147 of the 196 Series A energy firms were founded in 2018 or earlier. They can raise money but they cannot scale.

That is the same failure this paper is about. Capital is not the binding constraint, market access is: data that challengers cannot reach, procurement that shuts them out, and pilots that never become production. The UK should be the easiest place in the world to deploy AI in energy. If it is not, the firms in this Index will prove their products here and scale them somewhere else.

The Prize

The biggest near-term value from AI in energy is not in building new assets. It is in coordinating the ones the system already has but cannot yet orchestrate. Five areas stand out.

Where AI adds value	What it does	What's holding it back
Consumer and demand-side flexibility	Orchestrates heat pumps, EVs, home batteries and plug-in solar to shift demand, avoid network reinforcement and cut bills	Market access and data, not technology
Connections and network planning	Assesses connection applications, models available headroom and releases capacity through flexible or pre-emptible connections	Network incentives and access to network data
Constraint management	Matches curtailed renewable output with flexible demand, including energy-intensive industrial users, instead of paying wind farms to switch off	No market route for flexible demand to absorb surplus
System operation and forecasting	Improves forecasting and decision support as balancing instructions rise tenfold, cutting skip rates and balancing costs	Integration with control-room systems
Asset maintenance and network visibility	Predictive maintenance and dynamic line or thermal ratings extract more capacity from existing infrastructure	Proprietary systems and poor low-voltage visibility

The Strategy should measure value in **pounds off bills and gigawatts connected**, not in the number of AI pilots launched.

Britain's advantage

Few countries combine what the UK has:

- **A competitive retail market** that has already produced energy software platforms exported worldwide, proof that UK energy software can scale internationally.
- **An independent system operator.** NESO, the Ofgem AI Reg Lab and the Technical Sandbox give innovators credible counterparts.
- **Advanced flexibility markets** and a growing base of smart, connected consumer assets.
- **World-class AI research**, a deep startup ecosystem and strong capital markets.

The UK's comparative advantage is not hardware, at least not yet. It is the software, data and market-design layer that sits on top of a decentralised grid. Those products are exportable.

But the advantage is conditional. It depends on the UK being the easiest place to deploy these products. If firms prove their products here and then scale elsewhere, because data is easier to access or procurement is faster, the UK loses the industrial benefit. The rest of this report is about making sure that does not happen.

A fourth principle: competition and innovation

The Government's six challenges are the right ones, but one is missing: market structure. Many of today's barriers persist because incumbents control the data, the systems integration points and the procurement process. They have little incentive to open these to challengers. Treating these as neutral technical problems understates how much they are about who holds the keys.

The most urgent barriers are **access to data** and **markets and incentives**. These are the binding constraints. Better assurance or skills will not help a startup that cannot get the data to train its model, or cannot find a buyer willing to pay for it.

Learning from the World

Other major economies are moving fast on energy AI, and each offers a lesson. The common thread: the countries that scale will be those that pair public investment with open access, rewards for households, and clear accountability.

Country	What they are doing	The lesson for the UK
United States	The Department of Energy is funding a grid foundation model through its Genesis Mission and has invested $30m in AI for grid interconnection. The National Institute of Standards and Technology is developing an AI risk profile for critical infrastructure, with energy as a primary focus.	Fund open models and test environments that startups can build on, not only incumbent pilots.
European Union	The Strategic Roadmap for Digitalisation and AI in Energy supports energy-sector AI foundation models and will set metrics to track AI adoption.	Measure adoption too, but do not let "sovereignty" become a reason to favour national champions.
Germany	Grid operators may dim heat pumps and EV chargers during congestion in return for lower network charges. But smart meter rollout has stalled, with only 5.5% of metering points equipped by the end of 2025.	Control rights must come with a reward for households and the infrastructure to deliver them.
Australia	The Consumer Data Right, built on Open Banking, now covers energy, including metering, billing, retail product and distributed energy resource data.	An economy-wide data right can extend to energy.

The UK cannot outspend the US. It can outpace them on the things that matter most to startups: open data, a regulator that says yes, and clear rules on who is accountable when AI acts. That is where the rest of this report focuses.

Open Energy: Fixing the Data Foundations

Data is the clearest barrier to AI in energy, and the problem is institutional, not technical. The dataset that most constrains UK startups does not exist: half-hourly consumption data joined to behind-the-meter asset data, covering heat pumps, EV chargers, batteries, solar and heating controls.

The pieces are scattered. Consumption and asset data sits with suppliers, the DCC, Elexon, ElectraLink and RECCo, each with its own access route and fees. Asset records are spread across MCS, EPC registers, DNO connection records, OZEV grant data and supplier CRMs, with no common join. Low-voltage network visibility is poor. Consent is handled scheme by scheme, not through a single interoperable model.

What access exists is slow, often running on batches of 24 hours or more, and priced in ways that exclude most startups. Where no regulated API exists, firms fall back on screen-scraping, where ICO rules on third-party access remain ambiguous.

The cost of closed data

The gap is measurable. Our own research suggests that annual investment in British Energy startups built off the back of connecting energy data has never exceeded **£16m**. In contrast, Open Banking and Open Finance firms attracted a peak of **£836m**. The difference is regulated, standardised data access.

Open Banking shows what happens when a regulator opens up data on consumers' behalf: a new industry. Our reports *Making Smart Data Happen* (with the Tony Blair Institute) and *Licence to Share* set out how to do the same for energy.[1] Open Energy should resemble Open Banking as closely as possible, with licence and technical interoperability across schemes. We broadly support Ofgem's Smart Data Repository, but have concerns about both the design and substance of RECCo's Consumer Consent Service.

Legislate for Open Energy

Recommendation 1: The Government should legislate for Open Energy on the Open Banking model, with authorised third parties and cross-recognition for firms already authorised for Open Banking data.

DESNZ's energy Smart Data legislative framework is the vehicle. It should deliver consented, API-based access to consumer and asset data. Authorised third parties should be modelled on Open Banking's account information service provider (AISP) regime. Firms already authorised for Open Banking data should be able to access energy data without starting again.

AI-ready data should be built inside this scheme, not in a parallel AI-specific pipeline. One consent model, one authorisation regime, one set of standards.

Build the missing dataset now

Recommendation 2: The Government should start building the missing dataset now, linking MCS, EPC, DNO and OZEV records at MPAN level, and treat it as national infrastructure.

[1] Link

Legislation takes time. In the meantime, the Government should:

- Link MCS, EPC, DNO and OZEV records at MPAN level, using privacy-preserving identifiers.
- Fund a synthetic sandbox dataset so startups can train and test models before live access is available.
- Treat the resulting data as national infrastructure, with a named custodian and ring-fenced funding.

In April 2026 we proposed exactly this, a unified half-hourly consumption and distributed asset dataset, in our response to DESNZ's *Data for AI in the energy system* call for evidence.

Recommendation 3: The ICO should clarify the rules on third-party access to energy data.

Until regulated APIs exist, startups need legal certainty about how they can access data with customer consent. Ambiguity favours the incumbents who already hold the data.

Open the books on the networks

Startups can only optimise around constraints they can see. AI can already assess connection applications, model headroom and find where flexibility or pre-emptible connections could release capacity. But those tools are only as good as the data they can reach. Today, a developer, flexibility provider or energy-intensive business looking for a connection has to work through separate DNO heat maps, registers and statements. Each has its own format and update cycle. None gives a single national picture of where a connection is available, how long the queue is, or what reinforcement would unlock.

Ofgem is moving in the right direction. Its Transforming Connections Data programme proposes:

1. a new Demand Capacity Register
2. a new Distribution Works Report that links reinforcement works to the queue projects that depend on them
3. improvements to the Embedded Capacity Register and the Transmission Entry Capacity register, with a common schema and machine-readable publication.

These are welcome, but they fall short in four places:

- No single view. NESO and each DNO would publish their own registers. Ofgem has deferred a single access point combining them until NESO and the Energy Networks Association produce a business case.
- No common interface. Ofgem would set what data is published, but leave the APIs and data models to industry.
- No costs. The proposed works reports show what reinforcement is planned and when, but not what it will cost.
- Too slow and too partial. The Distribution Works Report would be updated quarterly. Both new datasets start at higher voltages and leave the low-voltage network for later.

The Netherlands has shown a better approach. Netbeheer Nederland, the association of Dutch grid operators, publishes a single national capacity map. It shows across the whole country where regional networks have enough transport capacity, with separate views for new demand and for generation feeding into the grid. Areas with transport scarcity are marked red. Before declaring an area full, operators must study whether congestion management, meaning contracting flexibility from existing users, can create room, and the results are published. At users' request, the underlying data can now be exported. All operators publish to a common data model, which includes the queue in each area in

megawatts and the number of pending requests. Developers have already built tools on it that let AI agents check grid congestion by postcode.

Britain should go further. Ofgem should require all network companies and NESO to publish the following through one national access point and a common open API:

- Where connections are available. A single national map for both demand and generation, at every voltage level, marking constrained areas and refreshed as conditions change.
- Queue data. Each area's queue, the capacity it represents and the reinforcement each project depends on, built from the new Demand Capacity Register and the existing generation registers.
- Reinforcement costs. The cost and planned spend of each reinforcement, and where flexibility, pre-emptible connections or AI-enabled network management could defer or avoid it.
- Flexibility tests. Wherever a network refuses or delays a connection on capacity grounds, whether flexibility was tested and what the test found.

Recommendation 4: Ofgem should require network companies and NESO to publish one national, machine-readable picture of where connections are available.

Ofgem should bring forward the single national view now rather than wait for a further business case. It should also set the API standard through the Energy Digitalisation Framework, aligned with Open Energy and following the example of the Netherlands' national capacity map, so that one integration gives every startup the whole country.

A Regulator built for Innovation

Regulatory culture is the second clear constraint on AI in energy. Ofgem has been far too slow to embrace innovation, and its sandbox shows it.

A tale of two sandboxes

The FCA and Ofgem launched regulatory sandboxes a year apart. Their records since could hardly be more different.

	FCA Regulatory Sandbox	Ofgem Energy Regulation Sandbox
Launched	2016	2017
Early take-up	578 applications and 168 firms accepted by end of 2022	7 sandboxes granted across its first two application windows
Recent activity	142 applications in 2025/26 alone	5 more granted after relaunch in 2021
What it offers	A full suite of innovation services, treated as a core route for new entrants	Narrow, time-limited relief from specific rules

This contrast is obviously inadequate. Over the four years in which the energy system has been transformed, Ofgem's sandbox has granted nothing new.

The gap does not reflect a lack of energy innovators. It reflects how each regulator sees its role. The FCA treats innovation services as a core route for new entrants into financial services. Ofgem's Future Regulation Sandbox, which would let it test rule changes before making them, was consulted on in October 2023 and has yet to launch. The AI Reg Lab and Technical Sandbox are welcome, but arrive almost a decade after the FCA showed what a regulator can do when it seriously prioritises innovation.

The consequences show up elsewhere too. Ofgem's sandbox permissions are time-limited, and liability for AI-driven operational decisions is unclear, so buyers default to caution.

Setting a higher bar

Recommendation 4: The Strategy should set Ofgem a clear expectation to match the FCA's ambition on innovation, backed by annual published sandbox figures.

Ofgem should publish annual figures on sandbox applications, acceptances and the rule changes that result. What gets measured gets managed.

Recommendation 5: Ofgem should launch the Future Regulation Sandbox without further delay, with a defined route from successful trial to permanent rule change.

A sandbox that never changes the rulebook is a waiting room. Every successful trial should have a defined route to a permanent rule change.

One front door

Recommendation 6: The Government should create a single front door for energy innovators across the Ofgem AI Reg Lab, Technical Sandbox, NESO and DESNZ.

A startup should not have to work out which of four bodies to approach, or repeat its case to each. A single front door would join up the AI Reg Lab, Technical Sandbox, NESO and DESNZ, and ensure that successful sandbox outcomes carry into permanent rules.

Regulators should use AI themselves

Recommendation 7: Ofgem, NESO and DESNZ should deploy AI across their own operations, including a regulator-run AI that tells innovators which rules apply to them.

The regulators and the system operator should lead by example. AI could:

- Process connection applications.
- Let innovators query licence conditions and industry codes in plain English.
- Triage sandbox requests.

An innovator should be able to ask a regulator-run AI which rules apply to their product, and get a clear answer.

From Pilot to Production

The gap between pilot and production is the single biggest problem startups in our ecosystem report. Network innovation funding has supported many successful trials. Far fewer have become business as usual, and there is no obligation to explain why.

Why pilots stall

The gap has four causes:

1. **Innovation funding pays for pilots, not adoption.** Money flows to trials. Nothing flows to scaling what works.
2. **Regulatory cycles are too slow.** Five-year price controls mean a product proven early in a period may not reach a business plan for years. A venture-backed startup cannot wait that long.
3. **Procurement shuts out small firms.** Large frameworks, high turnover thresholds, unlimited liability and heavy insurance requirements favour incumbents, regardless of product quality.
4. **The buyer does not capture the benefit.** A DNO that uses AI to avoid reinforcement may reduce its own allowed spend. The consumer gains, but the network has no reason to act. Avoided reinforcement is rarely credited to the team that achieved it.

Two further barriers compound these. Network control systems are often proprietary and lack open APIs, which creates vendor lock-in and makes every deployment bespoke. And buyers often lack the in-house skills to evaluate AI products, so they fall back on large incumbent vendors they already know. We see the same pattern in DefenceTech procurement. The lesson there applies here: the Government must actively build the bridge from pilot to production.

Building the bridge

Recommendation 8: Successful funded innovation projects should be adopted as business as usual, or networks should publish why not.

An "adopt or justify" rule would end the quiet death of successful trials. Ofgem should track and publish adoption rates for every network.

Recommendation 9: Network incentives should reward outcomes: avoided reinforcement, lower constraint costs and faster connections.

Today networks are rewarded for spending capital, not for avoiding it. Outcome-based incentives would let cheaper AI and flexibility solutions compete fairly with new copper and concrete.

Recommendation 10: Network procurement should be made startup-friendly, with proportionate thresholds, liability caps and insurance requirements.

Lower-risk AI applications should not face the same procurement burden as critical infrastructure. Networks should also create dedicated lots or challenge routes for innovative suppliers.

Recommendation 11: Price controls should include mid-period reopeners so proven AI solutions do not wait for the next cycle.

A product proven in year one of a price control should not have to wait for the next one to be deployed at scale.

Markets that Value Flexibility

Today's markets cannot fully support coordination at machine speed. AI can only optimise for what markets reward, and they do not yet reward flexibility by place and time. Constraint payments have already exceeded £1bn this year, and NESO projects balancing costs could reach £4-8bn by 2030.

What's holding markets back

- **Weak locational signals.** With the decision to keep a national wholesale price, locational value must come from elsewhere: local flexibility markets, constraint markets and network charging. Today these signals are patchy and slow.
- **Fragmented flexibility products.** NESO and each DNO define and procure flexibility differently. An aggregator has to integrate with many processes to offer one service.
- **Settlement and timing.** Half-hourly settlement is a major step forward. The Government should assess whether shorter intervals or closer-to-real-time products would unlock further value, weighing the benefits against implementation costs.
- **Unequal market access.** Small assets and aggregators still face barriers to entering some markets on equal terms with large generators.

One interface for flexibility

Recommendation 12: NESO and the DNOs should adopt standardised flexibility products and a common, API-based procurement interface.

An aggregator should be able to integrate once and offer its service to every buyer. Standard products and a common API would cut integration costs and open these markets to smaller players.

Restoring the locational signal

Recommendation 13: The Government should introduce constraint markets, connection auctions and thermal headroom markets, and back AI-assisted headroom assessment and flexible connections.

Our report *Power to the People* proposes three mechanisms that would give AI-enabled assets something worth optimising for:

- **Temporary curtailment markets** that route would-be-wasted renewable power to flexible, energy-intensive users behind the constraint.
- **Auctions for scarce grid connections**, with the proceeds ring-fenced for network reinforcement.
- **"Use it or lose it" thermal headroom markets**, letting flexible users bid for unused network capacity on a pre-emptible basis.

Together these recover some of the locational signal lost when zonal pricing was rejected last year. AI can also help clear the connections queue directly, by assessing available headroom and identifying where capacity can be released through flexible or pre-emptible connections. The government should back both.

Rules that machines can read

Recommendation 14: Market rules, tariffs and data should be published in machine-readable form.

If AI agents and their operators are to interpret obligations consistently, the rules themselves need to be machine-readable. So do tariffs and flexibility products, so that agents compete on price rather than screen-scraping.

Recommendation 15: Market surveillance should be equipped to detect algorithmic herding and tacit coordination, building on existing REMIT powers.

Many agents responding to the same price signal can create new demand peaks or price spikes. Market design and surveillance must anticipate this, not react to it.

Putting Households in Control

The AI-enabled energy system relies on automated tools acting on behalf of households. Public First polling of 2,026 UK adults for *Power to the People* shows the demand is there, but the system is not ready for it:[2]

- **82%** would be interested in adopting new energy technology if they could sell surplus power back to the grid.
- Only **9%** are on a time-of-use tariff, even though access to cheaper prices at different times of day was the most popular change people wanted.
- **35%** would install plug-in solar, against **5%** who own it today.
- Upfront cost is the main barrier for **45%**, and **13%** of non-adopters tried and failed to access a government scheme.

Startups in our network show what AI can do once the rules allow. Wondrwall's AI system manages a home's battery, heating, hot water and EV charging against the weather, tariffs and the household's routines. NODI's plug-in battery learns a household's usage and aggregates into a virtual power plant, but its route to market still depends on plug-in batteries being legalised.

Getting SSES right

The Smart Secure Electricity Systems (SSES) programme will set the terms on which AI can control household devices. It works through DESNZ's energy smart appliance regulations and Ofgem's load control licensing regime. We support its aims on security and consumer protection. But as we set out in our February 2026 responses to both consultations, the regime as drafted risks working against the AI adoption the Government wants:

- **It can penalise smarter optimisation.** A device that shifts load on a simple time-of-use tariff may fall outside the regime, while one that adjusts dynamically to wholesale prices may be captured. That favours simple incumbent tariff products over AI-driven optimisation that delivers more value to consumers and the system.
- **It applies enterprise-scale obligations to small portfolios.** Tier 2 Cyber Assessment Framework requirements, supply-style financial tests and flat fees risk falling as heavily on startups controlling a handful of homes as on large operators.
- **It can capture every firm in a control chain.** Many providers only execute signals from a licensed aggregator or supplier through an API. Licensing should fall on the party that decides when and how load is adjusted, not on everyone passing the signal along.
- **Sponsorship is not a real route to market.** Incumbents have little commercial reason to sponsor third-party products that compete with their own.

This matters beyond energy. Energy is one of the first sectors in which automated control on behalf of consumers is being licensed. How SSES treats AI-driven optimisation will set a template for agentic regulation across the economy.

Recommendation 16: The Government and Ofgem should make the Smart Secure Electricity Systems regime proportionate, including a provisional licence route to market.

Specifically, the regime should:

[2] Link

- Offer a proportionate entry pathway, modelled on HM Treasury's provisional licence for financial services: supervised operation for a fixed period, with limits on business volume, so firms can prove AI products before carrying the full compliance burden.
- Place licensing on the party that decides how load is adjusted.
- Define what is captured by outcome, not by how sophisticated the optimisation is.
- Scale fees, monitoring and obligations with portfolio size and controllable load.
- Keep the requirement for Measuring Instruments Regulations (MIR)-compliant device metering on energy smart appliances, because trusted device-level data underpins flexibility and its verification.
- Let consumers choose and switch the provider that optimises their devices.

Ofgem should also track market concentration and barriers to entry, so the regime does not consolidate flexibility markets among incumbents.

Agents that work for households

The first autonomous agents in the energy system will act for households, managing tariffs, switching, flexibility enrolment and device schedules. For them to work in consumers' favour, the foundations need to be laid now.

Recommendation 17: The energy Smart Data scheme should plan for authorised agents to act on a household's behalf, modelled on payment initiation in Open Banking.

- **Consented action initiation.** Agents should be able to switch supplier, change tariff or enrol in flexibility on a customer's behalf. Read access should come first, with action initiation phased in.
- **Accountable, authorised agents.** Any agent acting for a household should be an authorised third party with clear liability. Autonomy should be graduated: explainer, then recommender, then executor with explicit permissions and limits.
- **Resilience, not friction.** If agents make switching faster and more frequent, the answer is supplier financial resilience, not charges that slow switching. If a supplier's business model depends on customers not shopping around, AI will expose it. That is a feature, not a risk to be regulated away.
- **Agents for businesses too.** AI agents could manage energy procurement and flexibility for small firms. Rules for third-party intermediaries should not shut them out.

Finishing the job on household flexibility

Recommendation 18: The Government should finish the job on household flexibility: plug-in solar to a hard deadline, legal plug-in batteries and an end to the double charging of home storage.

Agents need assets to optimise. We have called for:

- Plug-in batteries to be legalised, and the double charging of home storage ended.
- Cost-reflective tariffs underpinned by half-hourly settlement.
- A permanent, outcomes-based zero VAT rate.
- Upfront-cost-free finance.

Safe Autonomy: Assurance and Risk

The UK has a window to become the place where energy AI is tested and proven first. That requires clear accountability and proportionate, outcomes-based assurance, not a copy of the EU regime.

International experience shows why this matters. The EU has classified AI used as a safety component in grid operation as high-risk, then deferred those obligations to December 2027. China, despite aggressive adoption, reportedly cannot yet fully use AI in dispatch. Neither model gives innovators the certainty they need.

Learning from financial services

Financial services offers a tested model. Algorithmic trading firms remain fully accountable for their algorithms. They must test them before deployment, keep audit logs, set risk limits and maintain kill switches. Regulators then supervise the market as a whole. Energy can adopt the same approach.

Recommendation 19: System-level assurance should be built on clear accountability and scaled to risk, with shared observability standards, open test environments and safe fallback modes.

- **Clear accountability.** The licence holder or registered operator deploying an AI system stays accountable for its outcomes, however autonomous it is.
- **Assurance scaled to risk.** The regime should distinguish three tiers, set out below. A uniform standard would shut out startups without improving safety.
- **Observability.** Common standards for telemetry, logging and data retention, so regulators and NESO can reconstruct system behaviour after an incident.
- **Shared test environments.** A system-level digital twin or testbed where vendors can test how their agents interact with others before going live. Like the US, the UK should fund open models and test environments that startups can build on, not only incumbent pilots.
- **Fallback.** Every autonomous system should be able to revert to a safe, less autonomous mode.

Tier	Example	Assurance Burden
Informs a human decision	Forecasting, tariff explainers, connection headroom models	Light
Controls consumer devices	Heat pump, EV and battery optimisation	Scaled to portfolio size and controllable load
Acts on critical network operations	Automated dispatch, network switching	Highest

The SSES load control regime is the first live test of this principle.

The risks that matter most

Concentration and lock-in is the most material risk. It should be met with interoperability, data portability, open standards and active competition policy, not by creating national champions. Sovereign capability programmes should be open to British startups and scaleups, not limited to large incumbents.

Other risks need managing too:

- **Herding and correlated behaviour.** Many agents responding to the same price signal can create new demand peaks or price spikes. Market design and surveillance must anticipate this.
- **Uneven adoption.** We share the Government's concern that networks may lag fast-moving private actors. The answer is to help networks adopt faster, not to slow down everyone else.
- **Fairness.** Optimisation should not systematically bypass households without smart meters or connected assets. Wider access to consumer data and devices reduces this risk.
- **Cyber security.** AI-enabled control of consumer devices widens the attack surface. Security standards should be clear and scaled to the system impact of the assets being controlled, not applied uniformly.

On fairness, AI is also part of the solution. Most households have never had access to independent energy advice. AI that explains a tariff, flags a cheaper option or spots a faulty heat pump is a gain for fuel-poor households, not a risk of what Energy UK has termed "cognitive surrender". The task is to let regulated firms offer better AI advice, not to discourage people from using it.

Staging autonomy

Recommendation 20: Autonomy should be staged by the criticality of the decision, and concentration risk met with interoperability and competition policy, not national champions.

Autonomy should advance in three stages:

1. **Shadow operation**: the AI runs alongside humans without acting.
2. **Human-approved recommendations**: the AI proposes, a person decides.
3. **Bounded autonomy**: the AI acts within set limits, with kill switches.

Consumer-side optimisation, where the risk is lower and the benefits are immediate, can move through these stages faster than control of the transmission network.

Conclusion

The UK has the ingredients to lead the world in AI for energy: a competitive retail market, an independent system operator, advanced flexibility markets and a deep startup ecosystem. What it lacks is the access, incentives and regulatory culture to turn those ingredients into deployed products.

The fix is not another round of pilots. It is opening up data on the Open Banking model, giving Ofgem the mandate and ambition the FCA has shown, building a bridge from pilot to production, designing markets that pay for flexibility, writing proportionate rules for automated control, and holding AI to account in proportion to the risk it carries.

Above all, every intervention should be tested against one question: does it widen or narrow the field of firms able to innovate? Get that right, and the benefits of AI will reach households and businesses as lower bills, faster connections and a more secure, cleaner grid.

Startup Coalition will keep working with DESNZ, Ofgem and NESO to make this happen, including by bringing founders to DESNZ's follow-up workshops and supporting implementation of Lucy Yu's review, *The Grid We Need Now*.

Britain can be the place where energy AI is proven and scaled. It should not settle for being the place where it is merely tested.

