AI Technical Sandbox

Making a positive difference for energy consumers

Call for Input

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1. Introduction

> "We are at a pivotal point in the energy transition. The economics of renewables, and the need to diversify our energy system, have never been more aligned. In my view, this underlines the importance of driving the energy transition, making sure that consumers benefit from a new and reshaped market, as fast as possible." Jonathan Brearley, Ofgem's Chief Executive

The rapid advancement of artificial intelligence (AI) presents opportunities and challenges for Great Britain's energy sector. AI has the potential to drive efficiencies, enhance consumer services, and support the energy transition to net zero carbon emissions. However, without appropriate oversight and safeguards, as outlined in our ethical AI use in the energy sector guidance, AI deployment could also introduce risks such as algorithmic bias, security vulnerabilities, or unintended consumer harms.

Ofgem is therefore exploring the creation of an AI technical sandbox to support the safe, effective, and strategically aligned development of AI in the energy sector particularly where it enables innovation, supports decarbonisation, protects consumers, and contributes to a more flexible and efficient energy system.

The sandbox would provide a secure, controlled environment in which energy sector participants including licensees, regulated entities, technology developers and data providers can safely design, test, and evaluate AI models, datasets, and system behaviours. It would enable innovation in a supervised setting while allowing Ofgem to build regulatory understanding and inform future frameworks.

This call for input seeks feedback from stakeholders across the energy, technology, and regulatory sectors to assess the case for a technical sandbox and shape its potential design. From the outset, it is important to note that acceptance into any sandbox does not constitute regulatory approval for wider market operation, nor does it imply Ofgem's endorsement of any AI solution. Should we proceed, clear communications will be provided to mitigate any risk of misinterpretation. The findings from any sandbox engagement will be published and made publicly available to support transparency and shared learning.

2. Objectives of the call for input

The call for input serves five key purposes:

1. Validate the need
   Confirm whether there is sufficient interest and justification for establishing a technical sandbox specially focussed on AI in the energy sector.

2. Understand use cases
   Identify current and emerging AI applications that would benefit from sandbox testing, particularly applications where regulatory uncertainty or technical complexity may impede innovation.

3. Explore enablers and reduce barriers to innovation
   Gain insight into the legal, ethical, or challenges which may impede AI experimentation or deployment especially where they affect innovation aligned with decarbonisation, digitalisation, or fair market access.

4. Inform technical sandbox design
   Gather stakeholder views on the features, tools, and support mechanisms that would make the technical sandbox useful and relevant such as test environments, regulatory guidance, or access to data.

5. Assess appetite for participation
   Guage interest from potential participants and collaborators, including innovators, utilities, network operators, and AI providers.

Specifically, the technical sandbox would enable participants to:

- innovate in a safe, supervised setting
- identify and explore risks related to AI such as transparency, explainability, and bias, as well as broader concerns including safety, security, robustness, fairness, accountability, and appropriate human oversight
- collaborate with Ofgem and other stakeholders to share learnings and build common understanding
- test AI systems using realistic operational and data inputs before wider market deployment

3. Background

AI is becoming increasingly integral to the planning, management, and operation of energy systems. From smart meter analytics and predictive maintenance to grid balancing and personalised customer services, AI applications are already reshaping how energy is generated, transmitted, and consumed.

New digital infrastructures and data-sharing frameworks are enabling energy companies to generate insights that support smarter and more responsive system operation. However, many innovators face uncertainty around how existing energy regulation applies to AI. This is notable in areas like such as the lawful and ethical use of data for example, relevance, proportionality, bias, and GDPR compliance. It also applies to algorithmic transparency and accountability, and whether AI systems operate as intended and meet system requirements without causing unintended consequences.

To address this, Ofgem is considering the development of a technical sandbox for AI applications (similar to the FCA's approach implementing a digital sandbox); a controlled environment for design, test, and evaluation of AI models, datasets, and system behaviours with regulatory guidance, to help innovators manage risks, accelerate learning, and generate insights to inform future policy.

Ofgem has identified four strategic drivers for developing a technical sandbox:

- AI innovation enablement to unlock safe, efficient, and high-impact AI applications in energy
- sector readiness to provide a platform to test AI use cases in a realistic energy system context
- regulator readiness to enable Ofgem to build evidence and respond proportionately to AI risks
- digitalisation trajectory to support the sector's evolving digital capabilities and cross-sector alignment

While complementary to Ofgem's AI regulatory laboratory (AI Reg Lab), the technical sandbox will be a digital solution, focused specifically on the design, development, and evaluation of AI systems covering architectures, data inputs, and model behaviours under realistic scenarios.

4. Scope of the call for input

A. Use cases and sector needs

Ofgem seeks views on the types of AI tools or applications that would benefit from a technical sandbox. These could include:

- consumer-facing services such as automated switching, personalised tariffs, virtual assistants
- system optimisation for example, grid balancing, demand forecasting, real-time control
- asset management including predictive maintenance, anomaly detection
- market operations such as automated bidding trading algorithms, price optimisation
- risk modelling including fraud detection, settlement forecasting
- data analytics using AI-generated insights from smart meter, consumption or other data

We welcome views on:

- which use cases are most promising or present the greatest risk
- what types of AI models or data-handling practices would benefit from the technical sandbox
- whether specific thematic areas, for example, explainability, fairness, autonomy, should be prioritised for the technical sandbox

B. Barriers and enablers

We are also interested in feedback on:

- legal, ethical or operational issues limiting AI innovation
- regulatory or market structures that impede transformative AI use
- issues around data access, governance, security or market entry

C. Technical sandbox design and features

To inform design, Ofgem invites input on:

- the most valuable features for participants, for example, access to datasets, regulatory guidance, test environments
- technical and operational capabilities that would improve effectiveness such as simulation tools, evaluation metrics, interoperability frameworks

- how participants should be selected and what safeguards should ensure responsible testing

D. Participation and eligibility

We welcome views on:

- which stakeholders should be eligible to participate, for example, energy companies, technology developers, academic, and research-led organisations working on AI innovation
- how to ensure a fair, transparent, and value-driven selection process
- how to encourage collaboration while protecting IP and confidentiality

For any sandbox, Ofgem will clearly communicate that participation does not imply regulatory authorisation beyond the scope of sandbox engagement.

5. Next steps

Ofgem will review and analyse responses to this call for input in autumn 2025.

Based on the evidence gathered, Ofgem will assess whether to proceed with developing a technical sandbox for AI. This assessment will consider:

- stakeholder interest and need
- feasibility and resource requirements
- alignment with Ofgem's regulatory objectives

If the case for development is strong, Ofgem intends to launch a formal consultation on the detailed design and implementation of the technical sandbox in January 2026.

Ofgem will also ensure that clear communications are embedded throughout the process to prevent any misconceptions about the technical sandbox's scope or regulatory status.

6. How to respond

We invite response to the call for input by Thursday 18 September 2025.

Please email responses to AIPolicy@ofgem.gov.uk with the subject line AI technical sandbox call for input.

You may respond to all or selected areas of section 4 and are encouraged to include relevant case studies or examples.

We also welcome expressions of interest from organisations wishing to engage further or explore participation in any future sandbox pilot.