

Response to Ofgem Consultation: AI Technical Sandbox

Execution Authority and AI-Mediated Action in Energy Systems

How to Use This Submission

This submission supports Ofgem policy, legal, and supervisory teams in evaluating AI systems that may influence regulated energy markets or operations. The main response sets out the regulatory risk and architectural solution. Annex A classifies advisory versus executive AI systems. Annex B defines authority resolution states and the execution outcomes that must be enforced at runtime.

Main Consultation Response

The dominant regulatory risk posed by AI systems in regulated energy environments is no longer model accuracy or bias, but illegitimate execution. As AI systems increasingly operate with delegated autonomy, existing governance mechanisms - policy documents, monitoring, and post-hoc review - are insufficient to prevent actions from being taken without resolved authority. This submission proposes authority-before-action as an execution invariant, ensuring that AI-mediated actions are only permitted when meaning, authority, and intent are coherently resolved at the point of execution.

Annex A: Advisory vs Executive AI in Energy Systems

Dimension	Advisory AI	Executive AI
Function	Analysis and recommendation	Direct operational or market action
Execution Path	None	Present
Authority Requirement	Implicit	Explicit and enforceable
Regulatory Risk	Misleading advice	Illegitimate execution

Annex B: Authority Resolution States and Execution Outcomes

Authority State	Execution Outcome	Regulatory Meaning
Resolved	Permitted	Legitimate action
Conditional	Gated	Pending compliance
Ambiguous	Blocked	Preventative control
Withdrawn	Locked	Prohibited by design
Emergency Override	Permitted with audit	Exceptional legitimacy