

CAPCO

Breaking the silos:
building a trusted
data ecosystem
for UK energy

Unlocking innovation, competitiveness and a smarter energy future through responsible data sharing.

External data sharing is foundational to a low-carbon, resilient, consumer-centric and innovative energy future. This paper explores the role of standards, the data control environment and modern data architecture in overcoming the challenges of interoperability, security and scale. By adopting collaborative practices and embedding protection, trust and economies of scale in data operations, the energy sector can unlock the resilience and efficiency required to drive the UK's net zero transition.

The UK's future energy system depends on the seamless flow of information between industry participants such as grid operators, suppliers, independent producers and new digital service providers. Yet progress is still blocked by stubborn barriers: legacy systems, patchy standards, security concerns and fear of data misuse.

Below we examine both the challenges and the emerging solutions. Our discussion highlights how interoperable standards, stronger governance, streamlined data architecture and sector-wide collaboration can transform data sharing from a point of friction into a foundation for innovation and a source of competitive advantage. Industry participants face a choice: stay stuck in siloed, defensive practices, or embrace a culture of responsible openness.

The organizations that act decisively will not only unlock new efficiencies and market opportunities but also shape the backbone of a resilient, consumer-centric energy system – and accelerate the UK's path to net zero.



Why data sharing has come into focus

Rapid shifts in technology and market structure in the energy sector are making external data sharing unavoidable.

The transition to a low-carbon, distributed energy system – with growth in renewables, smart grids and IoT devices – has led to an explosion of data from diverse sources such as smart meters, distributed generation, market platforms, weather services and satellites.

Increasing collaboration between organizations is driving a greater need for data sharing. For example, grid operators require data from generators, suppliers, weather agencies and more to accurately forecast demand and supply and maintain energy system stability.

Likewise, in the shift towards decentralization, new market participants such as independent power producers and virtual power plant operators rely on third-party service providers for trading, forecasting or balancing services – and this entails significant data exchange.

The ability of industry participants to both share and utilize shared data effectively now hinges on mastering a data ecosystem that is expanding rapidly in both complexity and volume.

Current challenges

Despite broad consensus on its importance, external data sharing faces a range of challenges in practice.

On the technical side, many energy companies still struggle with data silos and legacy systems that hinder accessibility and interoperability. Too much critical information remains locked in obsolete systems, buried in spreadsheets, or trapped in email chains.

Even when companies agree to share data, the lack of common standards means teams spend time mapping and translating data instead of acting on it. Poor data quality only adds to the problem, undermining the insights that organizations are trying to extract.

For example, many utilities lack clear naming standards and taxonomies for identifying and locating assets, leaving critical information fragmented and inconsistent. Without robust asset classification and location metadata, organizations struggle to integrate datasets, enable interoperability, or lay the foundations for digital twin capabilities.

On the governance side, sharing data always raises the risk of leaks, misuse or breaches of confidentiality. Companies are right to protect their crown jewels, but in doing so they often trap valuable information behind layers of caution. Collaboration stalls as legal teams hammer out contracts and governance frameworks, leaving innovation waiting on the sidelines.

Until the industry breaks through these barriers – technical and cultural – seamless external data sharing will remain more of a promise than a practice.

Meeting the challenges - strategic themes

Breaking through the barriers to data sharing requires more than small fixes – it calls for bold, coordinated action. The UK government's push to build a Data Sharing Infrastructure (DSI), the digital backbone of the future Virtual Energy System (VES), is a clear step in that direction. The proof-of-concept shows what is possible, but the real test will be scaling it, embedding standards, automating processes and making it part of everyday practice.

Regulation is already clear: Ofgem's Data Best Practice guidelines demand that organizations share data safely, securely, and openly where possible. The shift has begun, with initiatives such as Elexon's Smart Data Repository (unlocking near real-time smart meter data) and NESO's Open Data Portal (providing non-sensitive network datasets) setting the pace.

The Data (Use and Access) Act 2025 (DUAA) provides the legal and governance framework that underpins secure, transparent data exchange across sectors, including energy. For industry participants, it supports Ofgem's Data Best Practice principles by clarifying how personal and non-personal data can be shared responsibly, enabling smart data schemes, and supporting interoperable standards. The Act strengthens trust through updated privacy safeguards, fine-grained access controls and digital verification services, while reducing reliance on bespoke contracts. For the UK energy sector, the DUAA is foundational – giving organizations the confidence to scale external data in ways that drive innovation, efficiency and net zero outcomes.

The lesson is simple: don't wait for the DSI to mature before adapting. Whether through

the DSI tomorrow or existing platforms today, organizations need to standardize data models, strengthen data governance, and streamline architectures now. The sector cannot afford to drag its feet.

Adoption of standards

Adopting and establishing standards is essential. Consistent naming, definition, taxonomies and metadata enrich interoperability, strengthen governance and create the foundation for advanced sectoral capabilities made possible by digital twins.

In energy, the Common Information Model (CIM) is already proving its worth in transmission system modelling and interconnection planning. It enables true multi-vendor, multi-system interoperability. But adoption beyond transmission remains uneven. Market and settlement systems are only beginning to use CIM, while many distribution network operators (DNOs) still rely on bespoke, legacy data models.

That gap must close. As the DSI matures, CIM will become the default language for exchanging energy data. Even though it is not formally mandated yet, organizations that embrace CIM now – particularly DSOs and DER (Distributed Energy Resource) flexibility providers – will be ahead of the curve when standardization becomes unavoidable.

Metadata is just as critical. The Dublin Core standard, already widely used across sectors, could help the energy industry connect with external datasets – from weather models to economic forecasts to regional planning data. These inputs are vital for planning a net zero system. While Dublin Core isn't mandatory today, it is under active consideration. Energy players should begin adopting it now to ensure their data is discoverable and interoperable beyond the sector.

Enhancing the protection of data

Openness cannot come at the expense of security. Ofgem's Data Best Practice guidelines are clear: data must be shared, but only when it is safe, secure, and trusted. That means building control environments robust enough to distinguish between what can be open, what can be shared selectively, and what must remain protected.

This requires moving beyond blunt, all-or-nothing approaches to sharing. Companies should use modern identity and access management systems that can enforce permissions at the level of individual data fields. A trading partner, for example, may need aggregated production forecasts – but should not see site-level commercial data. Fine-grained access builds confidence that confidentiality will not be breached and competitive positions will not be eroded.

Efficiency is also critical. Too often, strategic data initiatives stall under manual case-by-case triage and exhaustive impact assessments. By embedding automation and adopting an incremental approach that prioritises marginal risks, organizations can ensure that data protection processes scale with ambition rather than constrain it.

Enhancing the management of data

Protecting data is only half the governance challenge; managing it properly is just as critical. Sharing unvalidated or inaccurate data risks reputational damage, regulatory penalties and loss of trust. That is why every dataset shared externally must come with proof of quality and provenance.

Audit trails, version control and lineage are essential. Datasets should be traceable to sources, transformations recorded, and limitations documented. This 'chain of custody' builds confidence and gives regulators assurance that compliance obligations are being met.

Clear ownership and stewardship rules must also be set upfront. Who maintains the single source of truth? Who approves changes? Who ensures downstream systems are updated? The answers to these questions cannot be left vague. Increasingly, organizations are turning to standardized agreements and industry-backed legal frameworks to codify permitted and forbidden uses of shared data. Doing so speeds up collaboration and reduces the friction of negotiating bespoke contracts.

Engineering economies of scale in the data architecture

The cost of provisioning and governing data multiplies in fragmented, manual environments. For many organizations, this has become a hidden tax on competitiveness. The answer is to design architectures that deliver scale economies – streamlining processes, embedding governance into systems, and automating wherever possible.

Cloud-based hubs and secure API gateways are replacing the old world of spreadsheets, emails and static file drops. Data pipelines should be built once and scaled endlessly, so that new applications can be added without rebuilding the entire exchange. Modern data platforms should be internally deployed to consolidate the data landscape and reduce the points at which connections such as gateways need to be made.

Furthermore, privacy-enhancing technologies (PETs) such as anonymisation, and automated quality checks, should be embedded directly into systems – not bolted on afterwards. This governance-by-design approach transforms data management from an operational cost into a capital investment. In this model, governance is not a brake on innovation but the engine that makes safe, large-scale data sharing possible.

Concluding thoughts

External data sharing in the UK energy industry is no longer optional – it is foundational to delivering a smarter, more resilient and low-carbon energy system. The challenges of legacy infrastructure, inconsistent standards and data security concerns are real, but they are increasingly being met with practical solutions that blend technology, governance and collaboration. By strengthening data governance, adopting interoperable standards and embedding appropriate data protection measures, the sector can unlock new levels of transparency and trust.

Industry pilots in areas such as outage planning and asset registration are showing what is possible. The next challenge is scale: shifting from one-off pilots to a sector-wide culture where data flows openly and securely.

If the industry can achieve that, the prize is enormous: a more resilient system, faster innovation, lower costs and a decisive step towards net zero. External data sharing is not a technical side-project – it is the backbone of the future energy system. The leaders who lean in now will shape not just their organizations' competitiveness, but the very architecture of the UK's clean energy future.



Key takeaways

- **Data is the backbone of the UK's net zero journey**, unlocking efficiency, innovation and resilience across the energy system.
- **Trust, standards and governance are non-negotiable**, as without them data sharing will remain fragmented and risky.
- **Leaders who embrace openness today will shape tomorrow's energy system**, creating lasting competitive advantage and accelerating the transition to a cleaner, smarter future.

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About Capco

Capco, a Wipro company, is a global management and technology consultancy specializing in driving transformation in the financial services and energy industries. Capco operates at the intersection of business and technology by combining innovative thinking with unrivalled industry knowledge to fast-track digital initiatives for banking and payments, capital markets, wealth and asset management, insurance, and the energy sector. Capco's cutting-edge ingenuity is brought to life through its award-winning Be Yourself At Work culture and diverse talent.

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