

## Testimonials

We engaged with over 200 people in the six-week period from across the energy sector and related areas. Below are a selection of testimonials provided in support of our Open Energy approach.

"Ensuring consistency and interoperability between the built environment and the energy sector with an Open Energy approach is essential to the development of our national data infrastructure", **Dame Wendy Hall, DBE, FRS, FEng, Regius Professor of Computer Science, Associate Vice President, and Executive Director of the Web Science Institute at University of Southampton**

"Open Energy will help support delivery of our legally binding net-zero targets and enable regulatory interventions across sectors", **Baroness Worthington, House of Lords**

"Building a digital ecosystem for the planet, to help us address our net-zero and SDG targets, will require groundbreaking initiatives such as Open Energy", **David Jensen, Digital Transformation Task Force, UNEP**

"Ensuring consistency and interoperability between Open Banking, Open Finance and the energy sector with an Open Energy approach would be a huge win for the UK", **Imran Gulamhuseinwala, Trustee, Open Banking Implementation Entity (OBIE)**

"Building on Open Banking, Open Energy will help us deliver a robust data infrastructure. This will help the UK to improve efficiency, meet our net-zero targets as well as stimulate innovation to enable companies to scale up.", **Irene Graham OBE, CEO, Scale Up Institute**

"I've sat in on several of these consultations about energy data now. There is simply no comparison. The Icebreaker One team really understands the complexity of the system they are looking to provide a solution for. I completely trust them to deliver a solution across the whole sector.", **Dr Alastair Buckley, Sheffield University**

"Icebreaker One is the most exciting thing to come out of MEDA", **Marc Bartlett, Head of DSO Transformation, Electralink**

"In IBM, we have had an active involvement in Open Banking and have seen the value it has enabled in the financial services ecosystem. We recognise the benefits this approach could bring to the energy system, in enabling the transition to net zero, customer choice and operational effectiveness - and we support the further exploration of this approach.", **James Mulliner Industry Solutions Business Development Leader Infrastructure, Energy & Utilities Industries, UK & Ireland, IBM**

"We want to see enhanced transparency and other improvements to the way data is exchanged in the energy system. Energy usage data is powerful - and energy is an essential service. Data about how people use energy in their homes should help us to better understand what we use and when, and it should lead to better services and support... Open Energy should provide consumers (and their intermediaries) with more detail about their consumption habits, and this in turn should give people more confidence to choose the products and service options that might best suit them.", **Dhara Vyas, Head of Future Energy Services, Citizens Advice**

"Prioritizing interoperability will allow open data ecosystems to gain more immediate traction whilst maintaining security standards. The FAPI [Financial-grade API] security profile developed for the UK Open Banking implementation can be extended to new markets and new sectors as demonstrated by the launch of the Australian Consumer Data Right implementation, which includes Energy. Raidiam strongly endorses any initiative that will broaden support from vendors, reduce costs of implementation and help to accelerate the digital future.", **Tim Johnson, Raidiam**

"A common and shared data infrastructure is needed in the modern digital world. I feel very strongly about Icebreaker One's approach for building one, based on their experience on open data & open banking.", **Dr. Yu (Steven) Zhang, Modular Geospatial Data**

### Individual signatory supporters to an Open Energy approach further includes

Peter Clive, Principal Renewable Wind Energy Consultant, Black and Veatch

Andrew Brooks, Lincolnshire County Council

Emily Judson, Doctoral Researcher - Digital Energy Governance, University of Exeter

Eirini Malliaraki, Alan Turing Institute

Paul Massara, former CEO Npower, Committee Fuel Poverty

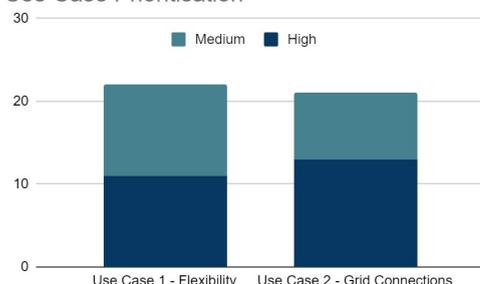
Dr Victor Levi, Senior Lecturer in Power Systems, School of EEE, University of Manchester

Marie Walker, Finance Edge; Adriano Amaral, Alavanca.ai; Thomas Verhagen, Senior Associate, Cambridge Institute for Sustainability Leadership; Alexander Geddes, Energy Facilities UK

### Feedback from interviews

Interviewees reported that the primary blockers to opening up energy data included five categories below. Our proposal works to address all five. Working with data originators and emerging standards to make opening up data as easy as possible, we address the Technical, Privacy and Data Standards issues. Our framework enables implementation of incentives by the market or regulators and allows cultural barriers to be overcome as it becomes apparent that data can be made available and

Use Case Prioritisation



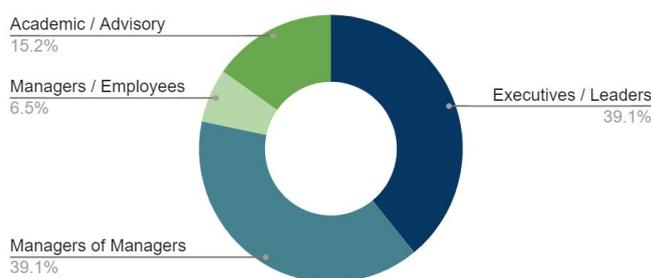
deliver benefits.

Interviews validated the importance of two use-cases. While both were considered important, establishing grid connections (for local authorities and private investors) was considered a priority (and possible with data which does not have legal restrictions).

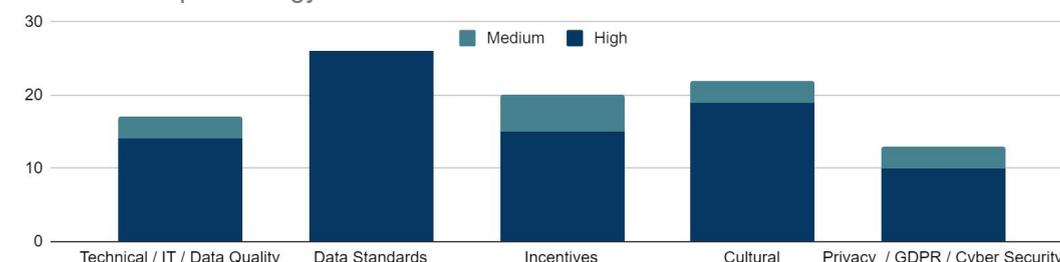
Open Energy is disruptive and data transparency provides the opportunity. There will be a conflict between new value (or the perception of value) pools driven by the market based on information asymmetries.

These are extremely challenging to unlock and we strongly recommend a dual approach: both Presumed Open and Shared Data be considered as a tactical solution to reduce friction. It is, of course, possible to simply regulate for Open licenses. While this may be desirable for certain categories of data, creating a process that can address Shared data outcomes will accelerate triage and engagement. Regulation and direction is needed in both cases.

Interviewee Roles



Blockers to Open Energy Data



Interviewees have highlighted material blockers to Open Energy Data. A 'precautionary principle' approach is recommended to address material legal challenges that could delay, stall or even block progress.

The industry has historically seen data as "an output from a task, not as an input". One DNO commented "people only ever pitch us solutions they think we might buy—this means innovation is rarely on the table". Equally, internally, organisations are likely to adopt a 'least friction/low risk' political approach that leads to incremental change rather than transformation. Our approach 'outsources the risk of transformation' to an independent vehicle that addresses cultural barriers to innovation.

Commissioning Manager (Regeneration Programmes), Lincolnshire County Council: "We are looking at energy data, open or otherwise at a Greater Lincolnshire LEP level, with business and communities at its heart. We would welcome further discussion as to how we might support a more supported and trusted set of sources, that we could augment with more local data - to enrich it."

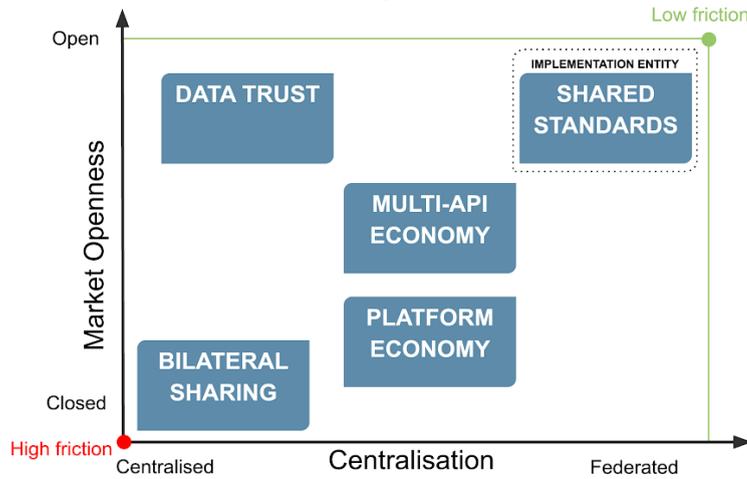
Senior Lecturer, The University of Sheffield: "MEDA shouldn't build a 'platform' - there are loads of these that are going to crop up. It should focus on the rules of engagement for energy data...it's going to be a long game - MEDA should prioritise use cases that...have the greatest carbon impact."

Strategic Proposition Manager, Ordnance Survey: "The example of the Open Banking standard was great. I'd hope that the winner would be the consumers."

Data Analysis Manager, Ofcom Data Innovation Hub: "I'm trying to work out what MEDA means for telecommunications, both in terms of reciprocity and also for coordinated implementations and ties in with UK Government Smart Data functions. If you think there is a possible friction, from lack of telecoms information, then I'd like to see what we can explore to address it."

### Market design — comparing data ecosystem models

In developing a functional, scalable and sustainable marketplace for data sharing, we have many models to learn from. Our experience and evidence points to the implementation of **shared standards** as a market-enabler that will maximise openness, enable multiple actors, encourage competition and unlock value across the ecosystem. Almost all interviewees preferred a distributed approach to data sharing over a data platform, quoting concerns around monopoly positioning, lock-in, IT risk and ability to deliver.

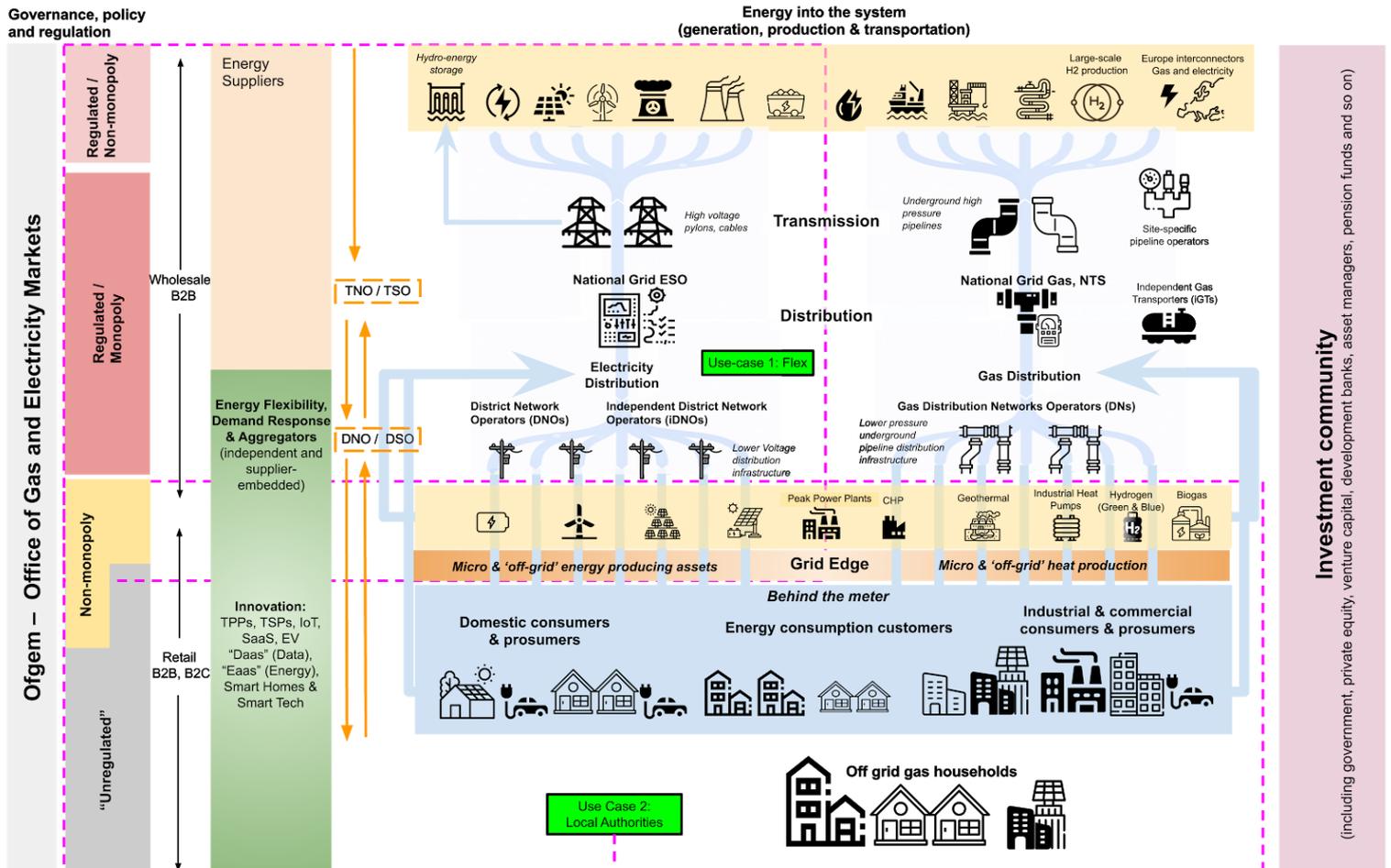


	Pros	Cons
Shared standards	<ul style="list-style-type: none"> <li>Open marketplace</li> <li>Shared integration / interoperability framework</li> <li>Close regulatory linkage &amp; feedback loops</li> <li>Enables market-participants to self-organise</li> <li>Low transaction cost (common approach)</li> <li>Makes clear what should be 'competition'</li> <li>Multi-point, whole-system value creation</li> <li>Fast to integrate once in-place (adherence to standards and processes)</li> <li>Builds on architecture of the web</li> </ul>	<ul style="list-style-type: none"> <li>Higher initial effort to reach consensus</li> <li>Requires cultural alignment</li> <li>Requires cohesion between regulation and market actors</li> </ul>
Data trusts	<ul style="list-style-type: none"> <li>Centralised administration</li> <li>Governance a key focus</li> <li>Single integration point</li> <li>Single contracting point</li> </ul>	<ul style="list-style-type: none"> <li>Lack of willingness to share into it</li> <li>Hard to address diversity of needs</li> <li>May struggle to meet diverse user needs</li> <li>Difficult to adapt in an agile manner/brittle</li> </ul>
Multi-API	<ul style="list-style-type: none"> <li>Market-driven</li> <li>Quick-to-market</li> <li>Competitive at all levels</li> </ul>	<ul style="list-style-type: none"> <li>Multiple rules &amp; integrations</li> <li>Complex</li> <li>High cost to enter</li> <li>Monopoly-gating points emerge easily</li> </ul>
Platform economy	<ul style="list-style-type: none"> <li>High single-point value creation</li> <li>Centralises control</li> <li>Faster-to-market</li> <li>Structurally attractive to reflect existing bureaucracies</li> </ul>	<ul style="list-style-type: none"> <li>Lack of willingness to share into it</li> <li>Value flows easy to skew to monopolies</li> <li>Doesn't scale long-term</li> <li>Commercial friction on data value</li> <li>Not a 'web-first' strategy (reflects legacy thinking not 4th industrial revolution)</li> </ul>
Bilateral contracts	<ul style="list-style-type: none"> <li>High single-point value creation</li> <li>Centralises control</li> <li>Faster-to-market</li> <li>Structurally attractive to reflect existing bureaucracies</li> </ul>	<ul style="list-style-type: none"> <li>High friction process (repeat for each relationship)</li> <li>Low/no reuse (unique to each use)</li> <li>Market inhibiting</li> <li>High cost</li> <li>Slow (3-9 month contract cycle)</li> </ul>

### Energy systems map

A broad overview of the entire energy system in the UK illustrates key stakeholders & elements within the electricity and gas sectors. The visual shows multiple levels, connections and the complexity of the ecosystem.

The sub-ecosystems of our two use-cases are highlighted in dashed-line boxes, showing the interconnections and interoperability between elements in the system as well as areas of interest and/or innovation. The graphic is inclusive but not complete. Indeed, capturing all interacting elements is something MEDA could automate. Here we show not only the flow of energy between elements but also the data silos and flows.



- Assets that supply energy into the UK power system
- Energy Supplier companies, such as the big six including EDF & E.ON, and others such as Ovo and Octopus. Many are vertically integrated
- "Grid edge", i.e. the interface between consumer and the energy distribution system, often where innovation and new business models are possible
- Indication of the parts of the ecosystem ripe for innovation and disruption
- Open Energy use cases ecosystems
- Flow of energy or electrification/gas-connections
- Data Flow

Constraints and planned mitigation

	Constraint	Mitigation
Technical	Lack of a secure, controlled environment supporting effective governance. <b>H</b>	Create a Governance Platform that enables trusted parties to access shared (restricted) data through a preemptive licencing approach. This is analogous to the approach used by Open Banking (the Directory) to solve the same problem. Data providers will be able to qualify requests for data and recognise that the data recipient is a trusted party. The directory will demonstrate how only trusted parties can access shared data through a pre-emptive licencing approach.
	Inability to discover appropriate data according to requirement. Data-sharing is weak across organisations and there is often no register of available data within an organisation. <b>H</b>	Ensure the data required is signposted, discoverable and accessible. This is a capability that exists within the Open Banking Directory.
	Data is not held in a standardised & structured way (e.g. Local Authorities hold data for similar assets in different ways). Asset locations and interrelationships may have inconsistent naming, inconsistent data formats, clunky data access mechanisms, inconsistent cleansing and gaps. Data ownership and rights, including data sharing agreements are often non-standard or non-compliant. <b>H</b>	This will be solved through creation of industry data standards. Working groups are required, comprising wide range of perspectives from industry stakeholders. These will create data standards and API specifications as required, in a highly collaborative and consultative approach.
	Inconsistent data quality and lack of trust in origination. Data consumers need to be confident about both data quality and performance of infrastructure providing the data. API expertise is not always available in organisations. <b>H</b>	Development of SLAs and minimum performance criteria in a set of operational guidelines. Adherence to these could be a regulatory precondition for participation in the directory.
	Structural change and local variation in the industry. Lack of alignment with non-energy datasets such as boundaries (e.g. DNO, GDNO, and city geographic areas are all different). <b>M</b>	This is primarily a spatial data classification issue. A working group is required to classify spatial and network related data from a range of users perspectives. This will create common standards across the whole open data ecosystem.
Commercial	Limited mandatory requirement to invest in aspects that will include protecting national interest, provision of the necessary data security infrastructure, adherence to consumer rights or managing commercial sensitivities. <b>H</b>	May need imposition of a regulatory mandate across some dimensions. Solutions can be provided. E.g. combination of directory access control, security (potentially FAPI/Open ID Foundation) plus robust consent model with enhanced consumer privacy/rights.
	Lack of incentives for regulated utilities to invest, develop and support open data systems. Regulated parties will need a stimulus( e.g. RIIO 2) requirement. There is no motivation to release data where there is no direct consumer value or RoI attributable <b>H</b>	Regulatory intervention will be required to mandate availability of some data types.
	Business case on sharing certain types of data, may currently not be obvious. Lack of understanding of the value of data held (over or under-valuing) <b>M</b>	Expect premium API models to emerge driven by the market, where value will become clearer as standards and ecosystem develop. A preemptive licence and commercial models will be required.
Regulatory/Legal	Uncertainty in an evolving (cross sector) regulatory landscape regarding data. Lack of common standards across sectors e.g. Local Authority planning. <b>M</b>	Engage with regulatory authorities (primarily Ofgem/Energy, ICO/Data) to create better regulatory certainty and set expectations.
	Concerns relating to compliance with GDPR and privacy law. <b>M</b>	Follow the approach developed in Open Banking to ensure regulatory compliance, evolving with enhanced consumer protections as they develop.
	Uncertainty around management of consent, risks and liabilities for sharing data. Data ownership must be clear, particularly data derived from several sources. Mechanisms for resolving data sharing issues and disputes do not exist. <b>M</b>	Follow approach developed in Open Banking to ensure regulatory compliance. Commercial rules required where data is derived from several sources. Create a dispute management system.