Greater Lincolnshire LEP Energy Council

ZOOM Meeting - **Topic: Greater Lincolnshire LEP Energy Council Meeting**

Time: 24th September 2020 10:00 AM London

Join Zoom Meeting

https://us02web.zoom.us/j/86103877920?pwd=WC9hRVRiU2NDbW4rSFZUWDhGOEVhQT09

Meeting ID: 861 0387 7920

Password: 109833

Paper 0 - Agenda

Time	Item and brief description	Lead	Status
10.00	Welcome and Formal Introductions	Duncan Botting	Verbal
10.10	Energy, and the future of the Local Industrial Strategy	Daniel Timms MetroDynamics	Presentation/Discussion
10.50	Energy & Data – Feedback and next steps from workshop held on the 26th June 2020	Duncan Botting/All	Paper/Discussion
11.30	Research & Development opportunities – Pre meeting action for council members is outlined below	Duncan Botting/All	Verbal/Discussion
12.00	Future focus of Energy Council – Please see discussion details below	Duncan Botting/All	Verbal
12.30	AOB	Duncan Botting/All	Verbal
12.45	Meeting Close		

Attendees: Duncan Botting, Justin Brown, Cllr Barry Dobson, John Henry Looney, Simon Green, Marie Harley, Arnie Craven, Jeurgen Schaper, Emma Bridge, Jacqui Bunce, Alex Riley

Apologies: Mark Hutchinson

Tentative:

Not responded: Lea James, Martin Haworth

Officers: Ruth Carver, Andrew Brooks

Research & Development opportunities – ***Pre meeting action***

At a time of energy transformation it is crucial that Greater Lincolnshire provides the best possible environment for energy based research and innovation to flourish.

Co-operation and collaboration enhances the quality of research and innovation, avoiding duplication, providing economies of scale, and leveraging diverse and outstanding talent across disciplines and geographies. It creates new opportunities to export and attract inward investment, and provides a pull for the best international talent.

We would like council members to start thinking prior to, and discuss within the meeting about how we might:

- Identify future research and innovation capability priorities for Greater Lincolnshire
- Identify opportunities for increasing inter-connectivity with other LEP areas
- Support development of a long-term investment plan
- Promote the Greater Lincolnshire as a leader in research and innovation around energy living lab test bed

- Set out the major steps needed to realise the long-term vision

Future focus of Energy Council

This discussion session will allow the Energy Council set its agenda over the next 12 months, with important areas of:

- Local Area Energy Plans
- Decarbonisation of industrial cluster
- Skills and training agenda for the low carbon sector
- Rural energy living lab activities
- SME Circular economy delivery

being considered and prioritised. Members are requested to give some consideration to these topics, for a full discussion to take place within the meeting.

Paper 1 – Energy Data Position Paper for Greater Lincolnshire

Publication	**Public Paper (published)**					
Meeting date:	**24th September 2020**					
Agenda Item:	**Energy Data Position Paper for Greater Lincolnshire**					
Item Subject:	**1**					
Author:	**Andrew Brooks**					
For:	**Discussion**	**X**	**Decision**	**X**	**Information**	

1 Executive summary

1.1 The digital transformation of energy data has the potential to rapidly transform the UK energy system. Bringing innovative companies together to identify gaps in the market and synergies in their offerings, and to deliver the integrated solutions, will benefit consumers in the future.

The UK energy system is going through increasing decentralisation and decarbonisation processes. In this context digitalisation and access to data are key enablers, as they unlock opportunities for actors across the value chain (i.e., consumers, prosumers, aggregators, mobility service providers, energy communities), providing them with new opportunities.

Making energy data discoverable, searchable and understandable by third parties, and usable, is a huge challenge. The maximum value of data can only be realised when potential users are able to discover it, search for related datasets and understand the content of data. Net Zero is going to need lots more intermittent generation and more flexibility, and that will require good data sharing.

The fast-growing digital energy sector has businesses spanning digital platforms, services and physical assets across residential, commercial, industrial and grid markets. Identifying opportunities and gaps for innovators to capitalise on as the energy sector transforms, will be vital in the coming years, and for delivering on the net zero ambitions by 2050.

1.2 Through an initial workshop, held on the 29th June 2020, discussions centred on:

- Focussing in Business consumption of energy data and demand curves, as the first port of call to analyse both trends and opportunities
- Developing a coherent and credible Greater Lincolnshire set of open data sources
- Underpinning national frameworks, with increased local data intelligence that will allow innovation, and help with the development of growth opportunities for the energy sector in our area, in essence and digital and data implementation plan.

1.3 The conclusions of this paper show that:

- Energy data will create a new market, either regulated or non-regulated and could produce new monopolies and/or constraints
- Energy data transformation is already happening with the Distribution Network Operators and National Grid Transmission having their license conditions changed to deliver "presumed open" data as the key to unlocking their data by the regulator OFGEM. This has been due the recommendations from the Energy Data Task force identifying the current legal framework is stopping most of the data being publicly available
- The Greater Lincolnshire LEP and Local Authorities has the opportunity to facilitate a fair local implementation, or be the taker of other's views on what that solution looks like for their citizens. The Local Authorities Energy Plan will be a key to unlocking this potential.

- The need for action to ensure this is a positive and not a negative impact for Greater Lincolnshire LEP area is an imperative that needs focus and attention as the entirety of the Digital Strategy will define how, when and at what cost opportunities are unlocked

2 Introduction

2.1 As data has become the critical enabler of the digital world; the role it plays in energy is only just being understood. It is far from clear what "data" is worth collecting and how the data that is worth collecting is accessed, curated, managed and utilised. This includes whose responsibility it is for each of these activities, and this is being discussed and identified currently, within various fora.

2.2 There is plenty of change happening in the energy industry, ranging from an increase in production from renewable sources to changes in how we consume energy, for instance the electrification of transport. We also have the nationwide rollout of smart meters which will eventually enable more ways for people to be more engaged with their energy consumption, and consumers are also becoming attracted to using new smart energy infrastructure such as thermostats, lightning or micro generation.

Alongside all the above, there are developments in areas that many people would not immediately associate with the energy sector. Personal devices, home appliances and even our vehicles are now becoming connected to the internet as "the internet of things". Developments in machine learning and artificial intelligence are enabling us to process information faster, and with better accuracy and sensitivity to context.

With the introduction of faster and automated switching of energy supplier, price comparison websites could move from a model of providing advice to consumers to taking full control. In this scenario a price comparison company might assess consumption patterns and energy supplier offerings to find the best deal on a regular basis, and then take a share of the price savings made.

We are likely to start to see energy contracts bundled with other products as a Utilities as a Service offering – where companies will monitor home energy efficiency and balance energy costs by installing new white goods or household insulation.

It is now possible to measure and monitor machine behaviour at such a granular level that we can identify invisible flexibility in the way we consume power, enabling our demand for energy to interact intelligently with supply and in turn pave the way for a system powered entirely by renewable energy.

Artificial intelligence enables us to orchestrate this demand flexibility at scale - coordinating industrial processes, local generation, battery storage and electric vehicle charging—to give rise to an autonomous, self-balancing grid which operates incredibly cheaply.

By automating and optimising distributed energy resources in real-time, we can create an affordable, zero carbon energy future. It's also difficult to talk about radical changes in business models without mentioning Blockchain, and distributed ledger technologies.

Blockchain is the first technology that offers a way to fully manage digital assets in a trusted, traceable, automated and predictable way. What distinguishes blockchain is that each 'block' is linked and secured using cryptography. Trust is distributed along the chain, eliminating the need for a trusted third party to facilitate digital relationships.

These technologies will decentralise energy trading and enable prosumers (consumers who generate their own power through microgeneration) to trade electricity directly with their neighbours.

Gaining access to data in rural areas is a major challenge, first from a connectivity perspective and then secondly, from a bandwidth perspective. To be useful data needs to be delivered in a timely, discoverable, secure, high quality, interoperable, and in a manner that respects privacy but yet strives for openness.

Modernising energy data access means both understanding and responding to the fact that every asset, system, organisation and network in energy (and beyond), there will be producers and consumers of data.

All Systems will increase in complexity, in that they are not only being digitalised, they are also becoming data-driven. This growth in data connections will be exponential as the market matures.

Any developments locally must look at how an architecture is implemented which can scale in data-type, volume and connectivity, across use-cases, organisational and logistical boundaries, sectors and jurisdictions. It must also deliver this in a secure, safe, robust and adaptable environment which addresses governance.

3 Who will benefit from this expansion?

3.1 Data users are diverse, from:

- Asset managers
- Distribution Network Operators
- Third-party service providers (e.g. aggregators) and new actors, as well as,
- Consumers both businesses and the general public as residential service users

With this in mind initial research in this area has also confirmed that:

- User needs are diverse, encompassing thousands of organisations, customers and society as a whole recognising the IT literacy of different groups in the population will vary
- There is no 'single data platform' approach that will (or should) address all needs
- There is a material risk to implementation, unless governance is addressed

In Greater Lincolnshire the LEP Energy Council has been considering how this data and digital environment will affect the energy landscape within Greater Lincolnshire, and how it can be shaped and supported locally when considering the implications of energy transformation, the circular economy and clean growth, plus the drive to be carbon neutral by 2050 and wider net zero ambitions.

4 Background

4.1 The Energy Data Taskforce, commissioned by Government, Ofgem, and Innovate UK, has set out five key recommendations that will modernise the UK energy system and drive it

towards a Net Zero carbon future through an integrated data and digital strategy throughout the sector.

4.2 The recommendations highlight that today a 'Modern, Digitalised Energy System' is being hindered by often poor quality, inaccurate, or missing data, while valuable data is often restricted or hard to find.

4.3 The Taskforce run by Energy Systems Catapult and chaired by Laura Sandys, has delivered a strategy centred around two key principles:
- Filling in the data gaps through requiring new and better-quality data, and
- Maximising its value by embedding the presumption that data is open

4.4 These two principles will start to unlock the opportunities of a modern, decarbonised and decentralised Energy System for the benefit of consumers.

4.5 The Energy Data Taskforce has developed five recommendations within their report: A Strategy for a Modern Digitalised Energy System (summarised here):
- **Recommendation 1: Digitalisation of the Energy System** – Government and Ofgem should use existing legislative and regulatory measures to direct the sector to adopt the principle of Digitalisation of the Energy System in the consumers' interest.
- **Recommendation 2: Maximising the Value of Data** – Government and Ofgem should direct the sector to adopt the principle that Energy System Data should be Presumed Open, supported by requirements that data is 'Discoverable, Searchable, Understandable', with common 'Structures, Interfaces and Standards' and is 'Secure and Resilient'.
- **Recommendation 3: Visibility of Data** – A Data Catalogue should be established to provide visibility through standardised metadata of Energy System Datasets across Government, the regulator and industry.
- **Recommendation 4: Coordination of Asset Registration** – An Asset Registration Strategy should be established in order to increase registration compliance, improve the reliability of data and improve the efficiency of data collection.
- **Recommendation 5: Visibility of Infrastructure and Assets** – A unified Digital System Map of the Energy System should be established to increase visibility of the Energy System infrastructure and assets, enable optimisation of investment and inform the creation of new markets.

4.6 The Taskforce identified a staged approach should be taken towards achieving a Modern, Digitalised Energy System:
- **Data Visibility:** Understanding the data that exists, the data that is missing, which datasets are important, and making it easier to access and understand data.
- **Infrastructure and Asset Visibility:** Revealing system assets and infrastructure, where they are located and their capabilities, to inform system planning and management.
- **Operational Optimisation:** Enabling operational data to be layered across the assets to support system optimisation and facilitating multiple actors to participate at all levels across the system.
- **Open Markets:** Achieving much better price discovery, through unlocking new markets, informed by time, location and service value data.
- **Agile Regulation:** Enabling regulators to adopt a much more agile and risk reflective approach to regulation of the sector, by giving them access to more and better data.

4.7 The main issue around data collection will be gaining the trust of operators, which wouldn't normally share data because of commercial confidentiality concerns, and this can include Distribution Network Operators through their regulated monopoly restrictions. This also has to make sure that where data taken from individual, that it is secure, given the potentially identifying nature of the information. Lastly, it needs to maximise the impact of the data it could make open by ensuring others could have confidence in it, and therefore use it.

Centralised digital and energy data architectures have not scaled effectively in the sector, and there is a need for a clear roadmap to transition from a fragmented data landscape to a robust, decentralised, federated data infrastructure. This is backed by the fact that there can be no single platform for all data and use-cases, and there will also be significant barriers to adoption around the centralisation of commercial data.

With presumed Open Data criteria and the work that the Energy Systems catapult has carried out as a guiding principle, we must also apply a precautionary principle to innovation, to address potential unintended consequences (e.g. unexpected monopolies).

Any digital/data architectural approach to developing domain-specific platforms, hubs, analytic networks, asset registries, catalogues, systems maps and so on requires a shift in thinking from 'push' to 'pull'—as websites enable search engines to find and index them, a distributed architecture creates a dynamic market between data suppliers and consumers. This enables markets for many solutions including platforms, apps and related services, while control is retained at the organisational level.

We need to address the upstream needs of data supply through an open, decentralised architecture with strong governance, and should that exist it would enable a multitude of solutions to emerge. These Data Principles have been accepted as the Best Practice approach:

5 Data Best Practice Principles

- Identify the roles of stakeholders of the data
- Use common terms within Data, Metadata and supporting information
- Describe data accurately using industry standard metadata
- Enable potential users to understand the data by providing supporting information
- Make datasets discoverable for potential users
- Learn and understand the needs of their current and prospective data users
- Ensure data quality maintenance and improvement is prioritised by user needs
- Ensure that data is interoperable with other data and digital services
- Protect data and systems in accordance with Security, Privacy and Resilience best practice
- Store, archive and provide access to data in ways that maximise sustaining value
- Ensure that data relating to common assets is Presumed Open
- Conduct Open Data Triage for Presumed Open data

6 User needs

6.1 Extensive stakeholder engagement across the energy and associated sectors has shown the following confirmed four clear macro trends in Energy, namely:

- Decentralisation of supply
- Decarbonisation, reduction in the carbon footprint, balancing demand, reducing waste and increasing the circular economy
- Digital transformation – of production, supply and usage monitoring
- Democratisation – opening of data so that more people have access to the data they are creating in order to make more informed, innovative decisions

As a result, data is growing exponentially at the grid edge in a rapidly evolving and increasingly complex demand and supply landscape, a common data architecture would only ever be one part of the jigsaw.

This data is needed to balance the network and support innovative decarbonisation initiatives. Current infrastructure is fragmented and does not easily allow data to be discovered or shared.

For business and consumers to fully benefit, different data sets from the regulated and non regulated eco-systems is urgently needed to inform decisions that efficiently decarbonise electricity, heating, cooling and transport. Data must be available in an accessible, discoverable, easily consumable way which is cost-effective, secure and trusted, with a common governance platform and processes across parties.

There are dozens of use-cases which demonstrate benefit from improved energy data sharing, two cases of which below illustrate different aspects of user needs while touching on the three pillars of:

- Asset registration,
- A data catalogue, and
- Digital system mapping

7 Flexibility services to balance the grid

7.1 System Operators need to balance supply and demand in geographical regions as Distributed Energy Resources (DERs) at the grid edge come online. Renewables must be supported, alongside electrification of heat and transport without expensive grid reinforcement.

The National Grid ESO is the electricity system operator for Great Britain (ESO) and Distribution Service Operators (DSOs) require access to both existing and new data, critical for integrating these DERs. Further, as energy aggregators and flexibility services play an increasingly important role in balancing the grid, they will need to access data to aggregate capacity, identify when flexibility is provided and settle contracts. Data will inform efficient, cost-effective, timely decision making, balancing the grid in a world of high renewable penetration.

8 Localised resource allocation

8.1 Local authorities must deliver a local heat and energy efficiency strategy, and meet net-zero by 2050. They need to understand DER technology performance, optimum mix and cost in order to successfully decarbonise and alleviate fuel poverty.

A new social contract is needed between various stakeholders in this new eco-system. Local Authorities need to provide DNOs with trusted-data demonstrating DERs can be effectively managed without risk, essential to overcome DNO refusal or high charges for network enhancement. Network Operators will need to provide access to data they hold, to understand community or industrial based options for meeting the Local Authorities' Net Zero ambitions, which will allow growth, productivity and COVID-19 recovery to be achieved in a balanced and cost effective manner.

Detailed information from DNOs on LV grid capacity will further streamline the grid connection process. Finally, they must demonstrate informed energy decisions to citizens relating to budget and resource allocation.

9 Constraints

9.1 Stakeholder engagement has highlighted many issues which must be addressed in the delivery of widely accessible shared energy data. These include, but are not limited to:

Commercial

- Lack of incentives for regulated utilities to invest, develop and support open data systems
- Business cases for sharing specific data, or understanding of its value, are not obvious
- Investment needs to protect the national interest, security, consumer rights and/or commercial sensitivities

Regulatory/legal

- Uncertain, evolving (cross-sector) regulatory landscape regarding data
- Compliance concerns over GDPR and privacy law
- Management of consent, risks and liabilities for sharing data

Technical

- Lack of a secure, controllable environment supporting effective governance
- Discovery of appropriate data according to requirements
- Access to data in a standardised and structured way
- Data quality and trust in origination
- Management of structural change and local variation across industry

10 Specific prototyping constraints

10.1 Creation of a platform to support a web of energy data requires demonstrable capabilities for data discovery, a trusted access process, and standards. Identified constraints and their mitigation strategies include:

- Developing business understanding and support for this approach. This will be achieved through a highly collaborative, consensus-based and consultative process, shaped by a deep understanding of user needs and the benefits that must be delivered
- Discovery of appropriate data is currently challenging for open data and shared data. The prototype directory will ensure data will be signposted, discoverable and accessible
- Data providers must be able to qualify requests for data and recognise that the data recipient is a trusted party. The prototype directory will demonstrate how only trusted parties can access shared (restricted) data through a pre-emptive licencing approach
- Datasets do not follow a common standard. A prototype standard will demonstrate how this can be approached
- Integration, while machine-to-machine, requires support. Access to technical support or commercial assistance will be demonstrated. Contact details for appropriate individuals will be enabled with a contact management system

- The end-user benefits must be clearly demonstrated. An example will be delivered through a mocked-up service that shows how the specific end-user needs are addressed
- Integration and technical capability will be required. This will be provided through API integration experts contracted to undertake the technical aspects
- The end-to-end process, including the ability to provide pre-emptive licencing, will be demonstrated through a mocked-up user journey & supported with annotated wireframes

11 What does this mean for Greater Lincolnshire?

11.1 The relevance of the sector

The Greater Lincolnshire LEP has now recognised digital as an important cross-cutting and enabling sector in the Greater Lincolnshire economy. The latest data suggests that there has been significant growth in the wider digital sector within Greater Lincolnshire, and the feedback to the survey shows a continuing and growing demand for networking and collaboration between digital businesses. On-going discussions within the digital sector in Greater Lincoln have led to the creation of Mosaic, a private-sector led co-working space for digital businesses. However this is not translated to energy in any meaningful way.

It is important to maintain the recognition of the importance of the sector and to ensure it is acknowledged as a key enabling sector in the redrafting of the current Local Industrial Strategy

11.2 Relationship Management

In the previous research it has been identified that the relatively modest size of the sector, and its clear geographical clustering, provide real opportunities for the development of an aftercare approach by the local authority/LEP network in Greater Lincolnshire.

This would involve getting alongside the most important players in the regulation authority (and their sponsoring government departments) and the wider energy sector, to understand the challenges to of opening up the available data, and looking to take bespoke action to help address these obstacles. We have significant evidence to suggest that the energy sector is growing, which emphasises the continued importance of this relationship management process.

11.3 Networks

There is some scope, from the evidence provided, to enhance the inter-trading and wider growth of the sector through networking. There are a number of local and informal networks, which have already been established which could be strengthened and enhanced through direct support in terms of promotion and resources. Digital Lincoln (www.digitallincoln.co.uk) is an example of a growing digital community in the region, and now receives the support of the Business Lincolnshire Growth Hub in recognition of the enabling role of digital technology in the region.

With Industry 4.0 and the increasing role of digital technology across all sectors, and there is an imperative to foster collaboration between digital and non-digital businesses, to maximise opportunities for innovation across all sectors in the Greater Lincolnshire economy.

11.4 Infrastructure

It is clear that, notwithstanding recent improvements, in some parts of the Greater Lincolnshire LEP area, poor broadband infrastructure and speeds continue to impede the development and growth of digital businesses. In addition to this a number of survey respondents identified the availability of premises, particularly "growing space" for established businesses as an issue. These issues have been reinforced through the responses to a 2019 digital survey, and should remain a priority for the Greater Lincolnshire LEP. With the COVID-19 pandemic, reviewing investment priorities that could allow say spend money into data links in the country, you could achieve more data flow, work faster, and even use less energy.

12 Scaling up

12.1 The economic benefits of an agglomeration effect around digital sector, as set out in reports such as Tech Nation, are clear. There is a nascent and growing cluster of digital businesses in Greater Lincoln underpinned by the presence of two Higher Education institutes and the defence sector. More work needs to be done in the context of all the activities above, which if progressed systematically and in concert, provide clear scope to strengthen not just the sector but the capacity of Greater Lincolnshire more widely.

The development of Mosaic and the establishment of the Lincolnshire Institute of Technology provide real opportunities to support the scaling up of businesses in key cluster areas across the county. Joint working between the Business Growth Hub and local economic development officers at district council level provide a possible way to move these opportunities forward at the sub-county level.

13 Conclusion

13.1 Energy data will create a new market, either regulated or non-regulated and could produce new monopolies and/or constraints

Energy data transformation is already happening with the Distribution Network Operators and National Grid Transmission having their license conditions changed to deliver "presumed open" data as the key to unlocking their data by the regulator OFGEM. This has been due the recommendations from the Energy Data Task force identifying the current legal framework is stopping most of the data being publicly available

The Greater Lincolnshire LEP and Local Authorities has the opportunity to facilitate a fair local implementation, or be the taker of other's views on what that solution looks like for their citizens. The Local Authorities Energy Plan will be a key to unlocking this potential.

The need for action to ensure this is a positive and not a negative impact for Greater Lincolnshire LEP area is an imperative that needs focus and attention as the entirety of the Digital Strategy will define how, when and at what cost opportunities are unlocked