Insights from Greater Manchester's Local Area Energy Planning (LAEP) and Beyond

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Abstract

Achieving the UK's net zero goal requires rapid and effective action. However, while UK policymakers agree on the importance of this target, there seems to be much less agreement on the best route to meeting this. This is why Local Area Energy Planning (LAEP) has proved an important and promising policy tool. It uses a data-driven, whole-system approach to understand the most cost-effective way of delivering net zero in a particular region. This paper examines the Greater Manchester Combined Authority's (GMCA) ten district-level LAEPs developed in 2021 based on various interviews with Local Authority (LA) and Combined Authority (CA) level stakeholders. By generating practical insights, such as a review of existing LAEP experiences and brand-new guidelines on designing and tailoring LAEPs to different geographies and governance structures, findings from this case study are relevant to a broad policy audience including, leaders across other CAs, such as the GLA and the WMCA, and LAs within the UK who are grappling with the challenges and opportunities that LAEPs provide in the context of establishing trust and working collaboratively towards the net zero goals.

Introduction

The Greater Manchester Combined Authority (GMCA) was one of the first CAs to develop their Local Area Energy Plan (LAEP), making it an interesting case study for understanding net zero governance. Since Greater Manchester's (GM) LAEP journey can mainly be considered representative of Combined Authorities with a relatively high degree of devolution, most findings related to the challenges and opportunities related to the design and delivery of LAEPs can help inform local authority efforts across the UK more broadly. This work will build on the first phase of the British Academy's Net Zero Governance programme[1] by focusing on local-level leadership in implementing LAEPs. For Greater Manchester, a 'trailblazer' city region[2] which aims to be carbon neutral by 2038[3], LAEPs have been developed for each of its ten local authorities (a.k.a., districts) as well as one for the city-region as a whole, detailing both the current situation and a roadmap towards a decarbonised future. The GMCA was among the first but is not the only Combined Authority in the UK grappling with the challenges and opportunities that LAEPs provide in the context of working collaboratively with its constituent local authorities and the wider local energy ecosystem. Tensions between top-down urban governance and more ad-hoc community-led retrofit development in Greater Manchester has been documented, highlighting the need for more collaboration with diverse standpoints across the city-region, and alignment of long- and short-term priorities[4]. Similar challenges have stood out from our interviews with the West Midlands Combined Authority, both in terms of governance – according to which the CAs work alongside LAs – but also in terms of data culture, when it comes to managing and sharing information or duplicating existing work. This creates a valuable opportunity for shared learning, as an in-depth examination of the GM LAEPs provides important insights for local or national policymakers. Our work informs the development of LAEP "blueprint" principles that combined and local authorities could then consider for their respective net-zero journeys, while building on work looking at governance institutions and prospects for local energy innovation[5] as well as research exposing the postcode lottery of local area energy plans[6].

Wider Energy Eco System

Initially, the Local Net Zero Hubs (LNZHs) were set up as temporary structures to deliver the £10 million Rural Community Energy Fund programme (now closed) [...] which led to the development of 200+ community energy projects between 2019 and 2022[7]. However, they now have an established role in hosting a broad range of government funds targeted at net zero initiatives and supporting LAs in their region with project delivery. As of 2022, LNZHs have received "over £15 million core funding from Department for Energy Security and Net Zero (DESNZ) for project

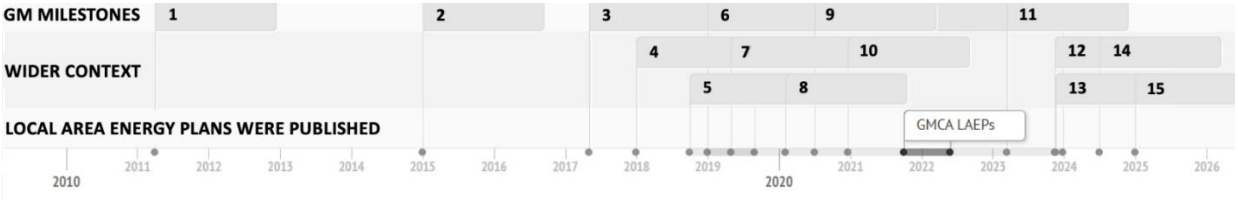
[1] Pennington, C. & Curtis-Kolu, T. (2024)
[2] DLUHC. (2023)
[3] GMCA. (2019)
[4] Hodson, M. & Marvin, S. (2017)
[5] Tingey, M. & Webb, J. (2020)
[6] Citizens' Advice. (2021)
[7] Community Energy England. (2024)

development and currently have 221 projects in their pipeline"[8]. They have received further additional DESNZ funding until 2025, with expectations that this will continue in the following years.

There are five LNZHs in England (Greater South East, South West, North East and Yorkshire, Midlands and North West). Each LNZH "has a small team of energy project managers led by a regional coordinator, with access to technical, legal and financial expertise, in some cases via call-off contracts with consultants"[9]. These serve as regional public entities to deliver wider central government schemes, such as the Rural Energy Community Fund which supported over 200 new community energy projects since its inception in 2019 until its close in 2022[10]. The hubs now exist to offer strategic and technical support to local authorities, public sector organisations, and community groups to secure funding for priority energy projects[11].

The Greater Manchester Combined Authority (GMCA) works alongside the LAs in Greater Manchester, covering the entire boundary area of the city-region. The GMCA is an interesting case study as it "has acquired the greatest level of devolution and is often held up as the 'ideal' form that all CAs in England must aspire to"[12]. CAs and LAs share many similar strategies for pursuing low-carbon goals; however, CAs focus on broader strategic planning, while LAs tend to handle the implementation of specific projects. For example, although heating decarbonisation is an emerging regional issue, combined authorities have various opportunities to directly influence and facilitate action in this area "both directly and as an enabler and facilitator of action"[13]. However, many LAs in the UK lack a CA-style of integrated cooperation and coordination, underscoring the importance of understanding the broader ecosystem in which the GMCA operates alongside the North West Net Zero Hub (NW NZH), Ofgem, and local energy providers. This ecosystem can be illustrated through a metaphor: where a CA serves as a venue for the gathering of LAs, the funding and activities sustaining the initiatives are akin to light catering and entertainment provided by the NZHs. While NZHs do not directly implement LAEPs, they play a crucial role by sharing best practices, offering guidance, and showcasing net zero initiatives led by LAs/CAs or available funding streams. This support helps build the project pipeline and fosters connections for planning and commissioning LAEPs. While not all LAs have a 'dedicated venue' for collaboration, there are evident benefits to economies of scale through such cooperation and coordination, such as large-scale renewable energy generation or combined heat and power plants to serve multiple LAs. Coordinating infrastructure investment, energy procurement, and technical deployment at a regional level can lead to cost savings. This is why new Regional Energy Strategic Planners (RESPs) are expected to boost capacity alongside their main role of providing intelligence and managing competing local infrastructure requests[14].

[8] APSE. (2024)
[9] APSE. (2024)
[10] Community Energy England. (2024)
[11] North West Net Zero Hub. (2024)
[12] Shutt, J., & Liddle, J. (2019); Hincks, S. et al. (2017)
[13] Littlewood, S. (2021)
[14] Ofgem. (2023)



id	Event		
1	The GMCA, initially formed in 2011, took its current shape in 2017, evolving from early support by the Association of Greater Manchester Authorities (AGMA), New Economy and other regional teams.	**8**	Ofgem Decarbonisation Action Plan
2	Energy Systems Catapult started work in Bury	**9**	Greater Manchester Local Energy Market project started
3	6th devolution deal & 1st GMCA mayoral election	**10**	DESNZ Energy White Paper: Powering our Net Zero Future
4	Local Net Zero Hubs were established	**11**	The “Trailblazer” devolution deal was published
5	Transition from DNOs to DSOs	**12**	RESPs were announced
6	Greater Manchester 5 Year Environment Plan 2019 - 2024	**13**	UK National Infrastructure Commission (NIC) – National Infrastructure Assessment
7	UK Government CCC “Net Zero: The UK's contribution to stopping global warming”	**14**	Future Energy Scenarios: ESO Pathways to Net Zero

Figure C: Timeline of LEAP-related events in GMCA and beyond. The main documents related to each of the timeline events: APSE. (2024), Climate Change Committee. (2019), Community Energy England. (2024), DLUHC. (2023), GMCA. (2019), GMCA. (2024), HM Government Energy Department. (2020), National Energy System Operator (2024), NIC. (2023), Ofgem. (2020), Ofgem. (2023)

Figure C provides a timeline view of the wider energy ecosystems. While DESNZ and Ofgem laid the groundwork, local NZHs informed the approach for regional planning, which was followed by the transition from Distribution Network Operators (DNOs) to Distribution System Operators (DSOs), modernising the UK’s electricity distribution system to better manage energy resources and integrate renewable sources. Subsequently, the Government’s Climate Change Committee (CCC) published the “Net Zero: The UK’s contribution to stopping global warming” report, outlining the strategy to achieve net zero greenhouse gas emissions by 2050. Later, Ofgem’s Decarbonisation Action Plan detailed the regulatory steps needed to support this transition, focusing on decarbonising heat, transport, and electricity. In addition, the DESNZ Energy White Paper, “Powering our Net Zero Future,” further outlined the strategy to transform the energy system. More recently, RESPs were announced and will be implemented, guided by the National Infrastructure Commission’s (NIC) National Infrastructure Assessment, which provides a strategic vision for the next 30 years. By building on the groundwork laid by LNHZs, the transition to DSOs, and the guidance from the CCC, Ofgem, DESNZ, and NIC, the GMCA LEAPs emerge as an important case study for understanding possible pathways towards net zero governance.

What are LAEPs?

Despite a consensus on the climate emergency, there remains uncertainty about how to effectively achieve net zero because of the scope, timescales, responsibility and cost of this task.

In this context, Local Area Energy Plans or Planning (LAEP) have emerged as a bottom-up, whole-system approach to delivering net zero in a particular region. These outline the most cost-effective way for a local area to decarbonise and set out an action plan for implementation. Though LAEPs are inherently data-driven, they vary widely in scope and may cover the local needs and targets of a city, district, or county council, from LA to CA level, depending on how these are funded and commissioned.

The first LAEPs were developed by Energy Systems Catapult (ESC) for Bury, Bridgend, and Newcastle City Council in 2015. Since then, ESC has created a set of guidelines for creating a LAEP[15], accompanied by a note on building a governance framework for coordinated LAEPs[16] and a set of standard data inputs and assumptions for LAEPs[17]. ESC was launched in the 2015-2016 Delivery Plan with £5m startup support funding from Innovate UK (UKRI)[18]. The ESC is an independent research and technology "non-for-profit private organisation"[19], part of the Catapult Network, which "brings together nine leading technology and innovation centres"[20].

Related to the ESC work, both the Centre for Sustainable Energy (CSE), and its Scottish equivalent - Local Energy Scotland - have proposed methods covering local area energy planning for stakeholders interested in undertaking, commissioning, funding, or participating in a LEAP. Each body suggests a slightly different approach; notably, Scotland's focus on community-led plans contrasts with Manchester's infrastructure focus. While 104 out of 327 UK LAs or CAs have set more ambitious net zero emissions targets than the national government, a third of them have not yet published any form of climate action plan; and as of 2022, only 20 LA LAEPs have been developed[21].This is potentially reflective of the limited capacity with which LAs operate in the net zero space. Since creating a LAEP is currently not a statutory requirement in most of the UK, participation is voluntary and usually done with innovation funding from publicly funded bodies. While some view this as an opportunity to become "trailblazer cities", such as Newcastle, Peterborough and Newport, alongside counties such as Oxfordshire and the Borderlands, others remain conservative with their time and resources, waiting to learn from the best practices of those further ahead in their journey before committing to an approach for their area.

[15] Energy Systems Catapult. (2024c)
[16] Energy Systems Catapult. (2024b)
[17] Energy Systems Catapult. (2022)
[18] Energy Systems Catapult. (2024a)
[19] Catapult Network. (2024)
[20] Catapult Network. (2024)
[21] Collins, A. and Walker, A. (2023)

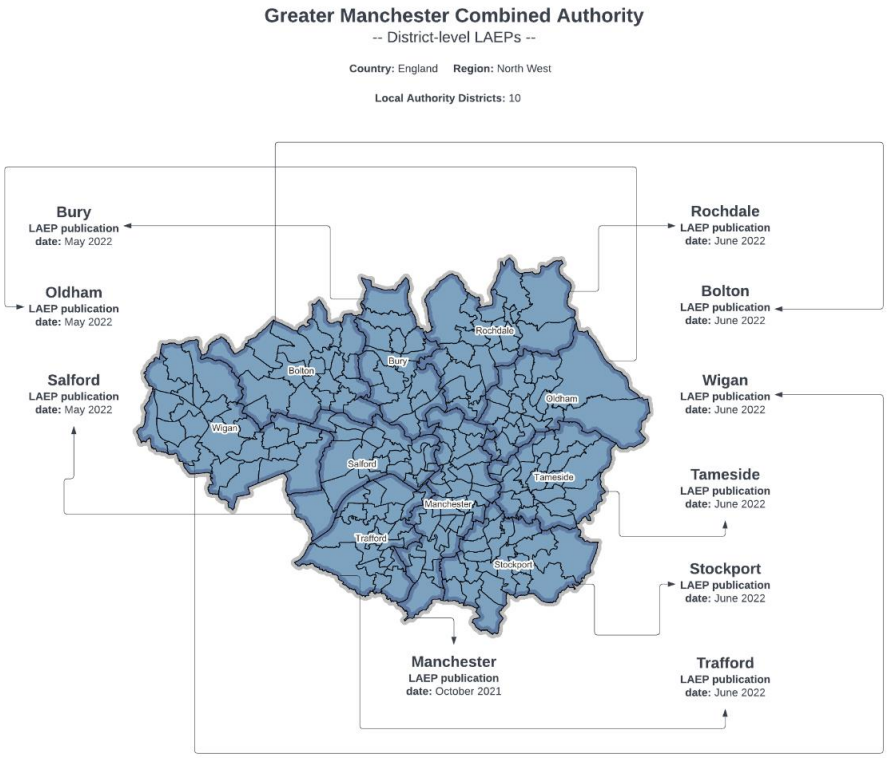


Figure A: The main documents related to the district-level LAEPs showing borough and ward boundaries: Bowick, L. & Coulsting, T. (2021), Bowick, L. & Coulsting, T. (2022a), Bowick, L. & Coulsting, T. (2022b), Commin, A. et al. (2022), Commin, A. & Lockhart, W. (2022), Coulsting, T. & Bowick, L. (2022), Coulsting, T. & Farooq, U. (2022), Farooq, U. & Coulsting, T. (2022a), Farooq, U. & Coulsting, T. (2022b), Leach, R. (2022)

Innovate UK's 2015-2016 Delivery Plan launched 3 additional Catapults (Energy Systems, Precision Medicine, and Medicines Technologies) in addition to the 7 already existing ones established in 2011. Thus, UKRI startup support of up to £5m was offered to the new Energy Systems Catapult (ESC)[22] upon its launch, which was subsequently topped up by up to £10m in funding in 2016[23] and £10.7m in 2017[24]. The increased capacity of the ESC, in line with its additional funding, enabled it to shift the focus of its work from smart systems and heat, and account for the full gamut of energy. This ultimately shaped the development of the Greater Manchester LAEPs, which account for a broad range of energy-related themes, such as fabric retrofit zones, heating system zones, EV charging, and local energy generation and storage. In 2022, Greater Manchester was the first city region to undertake local area energy planning at scale by supporting the development of LAEPs in each of the ten GM LAs, as shown in Figure A above, as well as an overall plan for the city region.

LAEPs rely heavily on data, using data that is available as well as estimates for energy (heating and electricity) and transport demand to model pathways for achieving net zero for a given target net zero year (usually 2050). Optimisation tools then propose solutions to meet these demands with minimised costs and emissions accounting for political, social, and technological uncertainties in different future scenarios. These scenarios include options such as "high demand"

[22] Innovate UK. (2015)
[23] Innovate UK. (2016)
[24] Innovate UK. (2017)

which involves large population growth and/or low housing insulation, or “hydrogen in the grid” for the scenario where hydrogen is approved for heating in the UK network. The potential use of hydrogen for providing domestic heating provides a unique challenge for future planning, highlighting the need for scenario testing, as the UK Government’s decision on hydrogen heating is not due until 2026[25].

These optimised scenarios, however, are not real-life solutions and cannot, by definition, include all the important local needs and stakeholder inputs. In this way, the technical outputs are used as springboards from which to develop a locally-specific plan that is sensitively informed by technical data rather than explicitly driven by it. Indeed, research into the heat decarbonization of LAEPs found that pilot LAEPs often struggled to formulate clear policy and authoritative actions from techno-economic modelling outputs due to their complexity and abstraction from local priorities[26].

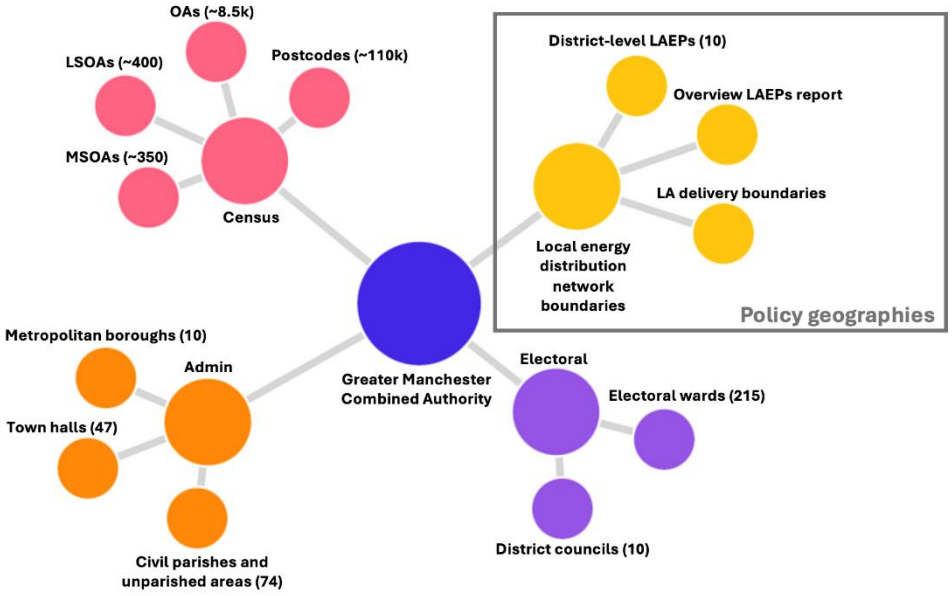


Figure B: Overview of the main geographic boundaries families that define the GMCA

Various datasets contributed to the GMCA's LAEPs and monitoring towards net zero. For example: energy consumption and generation, fabric retrofit zones, heat decarbonisation methods (such as heat pumps and district heat networks), electric vehicle charging infrastructure, and energy network capacity. These datasets aim to target and improve the allocation of resources, enabling strategic interventions in energy systems over time. They can also facilitate ongoing adjustments such that strategies remain aligned with net zero goals as technologies develop. There are broadly four different types of geographies in which these datasets could be

[25] Department for Energy Security & Net Zero. (2024)
[26] Cowell, R. & Webb, J. (2021)

reported: Electoral, Administrative, local distribution networks and Census (Figure B), some of which are coterminous (i.e. have the same boundaries).

LAEP development elsewhere

In Wales, the development of a LAEP is mandatory for every LA. This was set out in the 2021 Net Zero Wales strategy for their 2021-2025 Second Carbon Budget[27] . The LAEPs are carried out following the Energy Systems Catapult (ESC) methodology, and ESC acts as both technical advisor to the Welsh Government and manager and chair of the National Advisory Group. This National Advisory group contains not only the Welsh Government and Department of Energy Security and Net Zero, but also the regulator Ofgem, representatives from the four Welsh sub-regions, and utilities providers such as electricity distribution network operators (DNOs) and gas DNOs.

Newport and Conwy councils undertook the LAEP process in 2021 as pilots, and shortly after, the Pembrokeshire LAEP was produced in 2022. These successes have led to all 22 LAs in Wales currently undertaking the LAEP process, grouped by sub-regions: North Wales, Mid Wales, South West Wales, and Cardiff Capital Region. Each local and regional LAEP engages with locally relevant and essential stakeholders such as housing associations, social landlords, and community groups.

Similar to the GMCA LAEP process, each LA within these subregions will have an individual plan, with an additional overall regional plan to coordinate them. Moreover, all 22 plans will then be summarised to form the Welsh National Energy Plan[28] . The Greater London Authority (GLA) also leads the way in sub-regional LAEP development. Here, in contrast with Wales and the GMCA, LAEPs are developed in two phases: the first is an overview LAEP for the sub-region, delivered with support from the GLA, and the second is a more locally-specific, detailed LAEP for the individual borough[29]. In 2023, West London's sub-regional LAEP was published, and two further sub-regional LAEPs - for North and South London – are currently underway[30]). A further LAEP for East London is expected in 2025. To date, 5 of 33 boroughs have completed Phase 2 LAEPs[31]; since these are driven and funded by the boroughs themselves, there exist significant discrepancies between willingness and capability to complete the Phase 2 LAEP development.

Alongside the current North and South London sub-regional energy plans, the GLA is developing new, scalable tools to assist with data-sharing practices. Notably, the development of the LAEP Datahub (expected in 2024) will provide a digital platform for sharing relevant London-wide LAEP data inputs and outputs, facilitating better data practices and cultures[32].

While the first part of this paper has taken stock of the wider energy ecosystem and the LAEP landscape, the remaining sections will proceed by evaluating in-depth findings from the Greater Manchester case study. Themes such as the uneven data maturity or the need to foster a more

[27] Welsh Government. (2021)
[28] Energy Systems Catapult. (2024d)
[29] London Council's Climate Blog. (2024)
[30] Greater London Authority. (2024)
[31] Greater London Authority. (2024)
[32] London Council's Climate Blog. (2024)

inclusive data sharing culture will be explored to highlight the importance of governance and draw important lessons applicable to LAEP development across the UK.

Method

Qualitative Interviews

Our case study teases out local-level knowledge of the data challenges policymakers face while identifying practical tools to address them more broadly. It draws on 16 semi-structured interviews conducted during summer 2024 with various stakeholders within the GMCA [n = 8] and LAs [n = 5] in Greater Manchester, supplemented with interviews from, external perspectives [n = 3] from the North West and Midlands LNZHs, the West Midlands Combined Authority and Dorset Council, based on a connection made through the Midlands LNZH. Interviewees were suggested from the GMCA's Environment Research team who are directly involved with LAEPs, and then continued through a snowballing process and/or based on a survey to LAs within GM. Interview recruitment was conducted via video conferencing (MS Teams), lasting up to 60 minutes and transcribed verbatim for analysis. Thematic analysis was employed to identify key themes and patterns across the interviews.

Most interviewees had relevant expertise either in the low carbon sector - having worked directly on the development of the first iteration of the Greater Manchester LAEPs - or on the use of data within the GMCA more broadly. We interviewed stakeholders across different teams, with day-to-day roles that range from research to project implementation, and with specific domain foci from applied energy to general data infrastructure.

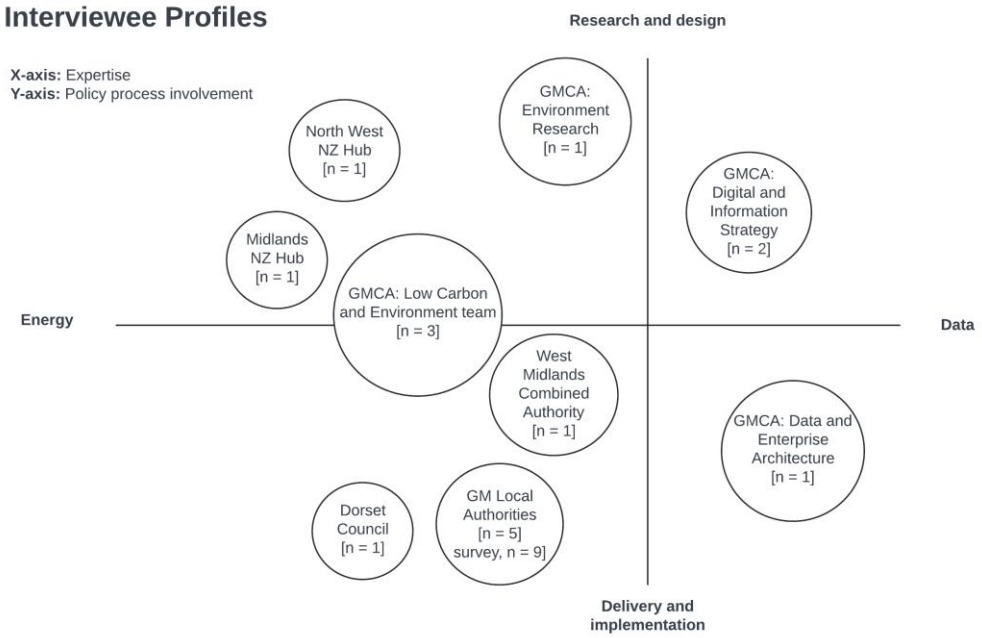


Figure D: Interviewee Profiles across two dimensions

Figure D presents a split of the interviews conducted based on the expertise of the stakeholders (X-axis, energy or data) and their policy process involvement (Y-axis, broadly research or implementation). The main themes covered in the interviews were: uses and shortcomings of the Greater Manchester initial LAEPs; the use of local data for energy planning, including the need to build data capacity internally; and the role of the GMCA in governance and leadership on energy planning.

Districts' Survey

To unpack how local stakeholders across the city-region view the LAEPs and their relationship with the CA for capacity and support, a short qualitative survey with 10 open-ended questions was circulated via email to each of the 10 Greater Manchester local authorities. We chose to reach out to individuals expected to work on LAEP delivery in teams or with roles related to climate and the environment. The survey questions gathered feedback from LAs on the LAEPs, exploring some of the gaps and bottlenecks in their capacity to deliver the plans, with the purpose of understanding potential solutions. The survey, which had a 90% response rate and with more than half agreeing to a subsequent interview, included space for LAs to showcase some of their unique local net zero initiatives.

Findings

Evolution of the GMCA LAEPs

Based on interview recollections from the Greater Manchester Combined Authority (GMCA), Energy Systems Catapult (ESC) was initially narrowly focused on heating and smart systems, which were individually insufficient against the broad scope of the net zero challenge. For example, the heat plan for Bury district in 2016 inspired a deeper collaboration between GMCA and ESC, serving as an example that prompted a more holistic view of energy within the Local Energy Market Programme, which started in 2019. Through iterative collaboration, the ten LAEPs – one for each of the Greater Manchester districts and an overall summary report for the city region were created.

These GM LAEPs have several uses, based on the goals they were initially set out to achieve, and in line with some of the benefits they've enabled the GMCA to reap over time. Initially, the LAEPs enabled Greater Manchester to articulate the scale and cost of the decarbonisation challenge while identifying geographical priority areas. These now also serve as valuable starting inputs for net zero project delivery at the local level.

Speaking to the Midlands Net Zero Hub revealed that smaller Local Enterprise Partnerships (LEPs) – collaborations between LAs and businesses – were often seen as a starting point that eventually hit a wall with either insufficient funding, data, or capacity to manage the information-heavy process. In Greater Manchester, LEPs had a contiguous boundary with the ten local authorities, but in the Midlands, the impracticality of narrow energy projects is especially salient in border regions: Herefordshire and Shropshire in England and their neighbouring Powys and Monmouthshire in Wales, have administrative boundaries which also demarcate different regulatory and governance frameworks. In comparison, the LAEP process anticipates and engages directly with larger information scales. As an interviewee with a focus on energy and implementation from GMCA articulates:

"What the local energy plans enabled GM to do was, from a policy and governance perspective, be able to articulate the size of the challenge, but then equally the size of the prize." - interviewee from GMCA's Low Carbon and Environment Team

More widely, because the LAEPs offered a bird's eye view of energy by collating several energy project streams (e.g. fabric retrofit, heating systems, EV infrastructure and energy networks) for which data was available, they enabled the GMCA to understand how challenges are interconnected and thus guide relevant capacity building across constituent districts. Notably, the LAEPs were especially useful in enhancing relationships with external stakeholders, such as the regional distribution network operators (Electricity Northwest and Cadent) and securing significant central government funding through the GMCA. In this way, energy planning and the concrete steps it promised towards delivery of net zero outcomes also played an important internal strategic role in the context of the city-region's new powers under the 2023 "Trailblazer" deeper devolution deal.

The example of GM LAEPs started as a series of narrow energy projects, often with external industry partners, each with its limitations of how these fit, and contributed to the context of broader energy challenges in the long-term. By the start of the 2019 Local Energy Market Programme, aligned with Ofgem recommendations[33] thinking had matured toward considering interconnected energy challenges that necessitated whole-system approaches. For example, the development of renewable energy must align to existing infrastructure, such as to stage the transition of heating systems. This thinking eventually led to ESC's now-established "Guidance on Creating a Local Area Energy Plan"[34] and the report on "Building a Governance Framework for Coordinated Local Area Energy Planning"[35] - both widely used by LAs around England and recommended by the regional Net Zero Hubs.

How to Fund a LAEP: Then and Now

Considering the opportunity to pilot the above ESC thinking, there was a discounted cost for the Greater Manchester case studies to offset the uncertainty of the outcome at the time, including risks around data sensitivity raised by attempting to take on this wider systems view. While energy data is not particularly sensitive, overlaying it with other data types, such as health-related information or fuel poverty, might pose additional problems, including the risk of commercial exploitation from private companies. This highlights the need for a tiered system of data accessibility, which ensures that less sensitive data is publicly available, with more sensitive data layers only accessible to the internal stakeholders who need them.

As LAEPs have matured, the market has broadened, making them more affordable, but the depth of the plans still depends heavily on available funding. This means that, despite following the same 7 stages of LAEP development by ESC, plans may end up being lighter touch in areas with fewer financial and/or analytical resources. However, upfront funding is only part of the picture.

While procuring a set of plans that accurately reflect the energy situation 'now' is helpful, updated data are valuable too given the long-time frame for net zero delivery (i.e. often more than 15 years). Because time-lagged delivery also implies inevitable changes along the way, it is essential to ensure that adjustments call into question strategic aims, which could negatively impact the delivery side of LAEPs. As the energy planning sector matures away from fragmented local interventions, it is taking on open science principles. Openness and commercialisation can coexist with checks to ensure benefits outweigh any risks through consistent benchmarking methodologies that can be replicated and clearly stated assumptions, which can be challenged and updated instead of re-invented:

"The LAEPs help everyone to get on and deliver – through providing a clear picture of the work required, it helps to overcome some of the uncertainty as to the best course of action, and it's that certainty which is critical to delivery" - interviewee from GMCA's Low Carbon and Environment Team

[33] Ofgem. (2020)
[34] Energy Systems Catapult. (2024c)
[35] Energy Systems Catapult. (2024b)

Several stakeholders in the GMCA highlighted the benefits of finding a way to “keep the plans alive” throughout the delivery stages, instead of redoing them every 3 to 5 years. Others propose iterations of the plans that expand their scope and allocate more time to the process to ensure all relevant components are included (i.e. more stakeholder engagement, dynamic data visualisations, etc). In both views, funding a LAEP is an investment in a navigation device to catalyse collaborative alignment. It requires continuity and the ability of local government to be an “informed customer” when liaising with external providers. This can be achieved either by having in-house capacity for data modelling or by conducting a separate due diligence of the commissioned process, to avoid the situation where the energy modelling and its associated assumptions are a black box for the combined or local authority.

Funding a local energy plan is finding the balance between what needs to be outsourced and what could *and should* be done in-house. This suggests that the more complex and costly elements could be funded and provided centrally, especially if LAEP development becomes a statutory requirement. Although one-off tasks like market research and benchmarking, data scoping and initial database design might be beyond the scope of internal capacities, ongoing tasks that require maintenance and updates might be better kept in house, even if these require new skills training. Examples for such task may include more advanced scenario modelling that might need to respond and be updated with actual delivery milestones.

One example of how NZH are ensuring LAEPs are developed in a cost-effective but also replicable way is the ESC’s Net Zero Go knowledge sharing platform, where LAs can discuss their experiences and learn from each other. According to an interviewee directly working on Net Zero Go, another purpose of the platform will be to focus on building a repository of procurement documentation, to ensure a more systematic approach to LAEP procurement.

In Oldham, the Green New Deal delivery partnership is using Net Zero Accelerator funding to develop community-led local area energy planning, based on a series of focus groups, workshops and consultations with local stakeholders. The aim of this engagement is to gather their input on the delivery of specific net zero projects and secure their support. The meetings bring together the private sector, community members, local businesses and landowners, and use the existing LAEPs as conversation starters to explore what would be feasible and desirable in terms of implementation. Ultimately, the Green New Deal delivery structure allows local stakeholders to participate in creating the Council’s net zero project pipeline, by enabling it to achieve its procurement goals as a joint venture with big commercial infrastructure partners that may enable LAEP delivery at scale. Funding a LAEP is difficult because of the technical literacy needed to commission and use its output. Therefore, there is great value to projects like Net Zero Go and others to facilitate knowledge sharing through local government with examples of good data-informed practices of policy making, and which can be generalised across LAs.

Unequal Data Maturity

When it comes to looking at entire energy planning, just using software - as opposed to developing it in some form - could pose several problems for collating and analysing growing amounts of information clearly and consistently. One interviewee estimated that most CAs may have at most between 5-10 individuals who could dedicate themselves to research and development on local

intelligence, with local authorities often having a single individual analyst, unlikely dedicated to energy planning. The data capacity and analytical maturity for research and development is greatly unequal across local government organisations. This creates bottlenecks for how information is used and shared, as interviewees discussed how different organisations and even different individuals within the same organisation have different risk appetites for data sharing and the accountability this comes with.

The interviewees within the GMCA, which has an unusually large research capacity of 40 persons, raised that data access difficulties are underpinned by an assumption of a limited capacity or immature culture of how to navigate its useful development. Data – like any other tool – inherently generates additional tasks and responsibilities to be useful, necessitating sufficient capacity to manage and process this influx of work. Data sharing is often intended to alleviate this burden by distributing the workload and making information accessible across different teams or organisations with the aim to streamline operations and reduce costly procedural redundancies. However, for this to happen in practice there needs to be a shared understanding of assumptions, possible interpretations and disclosure processes. It requires a shared data literacy standard that ensures local energy plans can be read and developed by all stakeholders. This duality highlights the complex balance between managing benefits of data sharing and the demands of its access.

One interviewee from GMCA's delivery side highlighted the need to arrive at a place of seeing the benefits and value of information first, then untangling any risks that might need to be mitigated. They noted a fear of LAEP data's commercial exploitation, but also a sense that this cannot be avoided, only better managed by local government. For example, by taking on the role of skilled steward with the capacity to handle new information effectively. Others, however, would argue that responsible public services with good information management reduce risk first and then create value, especially as more detailed data becomes available. A solution that emerged during the interviews was to use data not only directly for energy policy, but to also inform what skills and training is needed to deliver these policies over time.

Sharing Culture Need

"You can use the LAEP data to inform training and skills, to inform public transport requirements, to inform growth plans, to inform economic viability" - interviewee from GMCA's Low Carbon and Environment Team

Using data for delivery means facilitating its access, which is a question of data culture. A perceived challenge for data sharing is in the relationship between the CA and central government, where national data is currently regarded as more important than the local level insight. This shapes the level of information available for planning as well as who has access to it. Several stakeholders within the GMCA flag that there isn't a "parity of esteem" between the CA and the national government because the value of local information or user interpretation comes into question and thus is much less likely to be made available. One interviewee mentioned that central government - through the Department for Energy Security and Net Zero (DESNZ) - does not have a formal position on LAEPs. Instead, this is largely endorsed by Ofgem as tools to guide DNOs investment plans. This appetite for more specific energy planning fuels a growing recognition that local data, despite its narrower error tolerance, holds intrinsic value and that could

guide the delivery processes, especially for estimating investment requirements as highlighted by several LA interviewees.

For example, in Manchester City Council, the Net Zero Accelerator is funding a project to create a net zero neighbourhood in Wythenshawe using a place-based approach. This aims to consider assets highlighted from the existing LAEPs to build a project pipeline and a programme for delivering the Council's net zero goals. This builds on previous work conducted on district heating and EVs and draws insights from a previously commissioned Renewable Energy Study, setting out the challenges and benefits associated with different technologies based on their potential opportunities for deployment. Given that Manchester has also started developing an action plan for LAEP delivery prior to receiving the Net Zero Accelerator funding, there is also the potential to finalise this and combine it with other workstreams further down the line.

"We need to hold everybody together and we're going to do that with trust and transparency" - Net Zero Hub Delivery Manager working on Local Area Energy Planning

A shared data culture is essential as successful LAEPs are not only a data gathering exercise, but also a target monitoring task, which inevitably requires the management of noise and uncertainty. One interviewee from the GMCA compared energy planning to creating a database, which can get complex over time. Similarly, a Greater Manchester LA policy officer articulated the need to bake roles and responsibilities into LEAPs, ensuring they can be effectively implemented at the council level. A recognition of different roles thus becomes necessary in addition to policy, research and development, and general IT (to include digital roles). These roles will facilitate the modernisation of existing infrastructure and processes, information governance roles (that provide steers on legal compliance and questions of data lifecycle management), and stakeholder outreach to keep policies aligned with local communities and industry. Information governance (IG) - the structured approach to managing data, ensuring it is accurate, secure, and used in compliance with regulations – is particularly important and well developed in Greater Manchester, but it must exist in a wider context of stakeholder engagement and inclusive participation. For example, in the West Midlands, the NZH team holds coordination group meetings and monthly collaboration days where core members visit different cities to engage face-to-face with local stakeholders. During these sessions, they share relevant data openly, encourage feedback on what works or doesn't, and foster an environment where meta-information is freely disseminated to brainstorm collective decarbonisation efforts. Similarly, Stage 2 of the ESC's Local Area Energy Planning (LAEP) guidance focuses on 'Stakeholder Identification and Engagement'. More recently, one GM LA interviewee highlighted Carbon Co-op's Community Led Energy Planning approach pilot projects, which brought together community members in focus groups through workshops and educating them on energy generation, efficiency, and transport to develop their own energy plans and actions using the LAEPs as conversation starters. These approaches underscore the importance of a transparent, human-driven data culture based on frequent, informal exchanges that enable adaptations and drive effective energy planning.

Conclusions

Local Area Energy Plans (LAEPs) are maturing tools that highlight unequal data maturity. Examples from our interviews show how local leaders are likely to struggle on the road to net zero because of limited access or capacity to handle complex energy information. Enhancing in-house skills and prioritising data sharing can ensure that information is consistently and effectively used over time and across different levels to improve energy planning and delivery. The Greater Manchester Combined Authority's (GMCA) experience has led to its subsequent leadership in information governance (IG).

Equally important is the fostering of a data-sharing culture underpinned by some shared understanding of LAEPs. The GMCA is an example of how informed and comprehensive energy strategies are possible and add value, as a process, rather than a one-off product. It highlights the trajectory towards a need for more open intelligence practices and a culture where data and insights are exchanged, and plans can be and are regularly updated to ensure LAEPs remain relevant and responsive to driving progress towards net zero goals.

Lessons from existing LAEPs, both within and outside Greater Manchester, highlight the importance of governance that integrates the human aspects of data: ensuring that culture, curation, and communication enable data to drive meaningful action. For broader implementation, local authorities (LAs) should take ownership of LAEPs. To do so, they require support to focus not only on practical solutions such as shared guidance on data management and resourcing, but also financial incentives and support for LAEP development at a more comprehensive scale.

In conclusion, the findings from this work suggest three related recommendations. Firstly, LAs will benefit from the facilitation of a regionally-led, data-information culture which encourages the regular exchange of local insights and data updates for keeping energy plans alive. Secondly, some form of baseline training across the modelling to delivery pipeline is necessary to manage complex energy data effectively; this can be delivered through combined authorities (CAs) or Regional Energy Strategic Planners (RESPs). These trainings could take the form of knowledge exchange resources and events may be further tailored to regional opportunities and challenges to enable and enforce data sharing policies that promote consistency across different levels of governance – another key recommendation. Finally, central government should commit to sustained financial incentives, so that the most complex and costly elements are funded and provided centrally, especially if LAEP development becomes a statutory requirement. This support would allow LAs to keep local actors, such as community groups and industries, engaged since net zero delivery can only be achieved collaboratively with the right alignment of goals. Taking into consideration the current net zero governance landscape and the resource-constrained capacity of LAs, it is essential to stress the importance of prioritising the implementation of our final recommendation. Central government should increase support for LAEP development in under-resourced areas of the country to ensure that gains from the net zero transition are evenly distributed instead of deepening existing regional inequalities. LAs that have already developed their LAEPs should prioritise the development of a delivery pipeline for the plans, while those still in the beginning of their LAEP journey should focus on information exchanges to harness the use of local data.

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