

National Energy & Environment Data Specification

Briefing Document

July 2026

Version 001

This report has sponsored by the **Local Net Zero Hubs** and has been published by the **North West Net Zero Hub** supported with funding from the **Department of Energy Security and Net Zero**.

The report is provided for the purposes of knowledge transfer across the public sector. It aims to raise awareness of good practice approaches to delivering projects that support the net zero agenda. The **North West Net Zero Hub** is not liable for any decisions adopted by organisations based on the recommendations contained in this report.

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Acronym	Description
DFES	Distribution Future Energy Scenarios
DESNZ	Department for Energy Security and Net Zero
GIS	Geospatial Information Systems
ITT	Invitation To Tender
KPI	Key Performance Indicator
LAEP	Local Area Energy Plan
NEEDS	National Energy Environment Data Specification
NESO	National Energy System Operator
RESP	Regional Energy Strategic Plan

The Purpose of National Energy & Environment Data Specification (NEEDS)

NEEDS has been developed to assist local authorities in identifying the key considerations in developing a procurement specification for digital planning, with a particular focus on local area energy planning (LAEP). It can however be tailored to a range of planning types which are discussed later.

The key aim is to help provide consistency and clarity in shaping the procurement specification with the key benefits of:

- Clearly communicating the key aims and objectives of the plan
- Stating the expectations in outputs and delivery
- Highlighting the implications and considerations of scope on time, cost quality
- Helping the local authority to navigate the complexity of options including digital twins
- Helping the supply chain to ensure it provides a fully aligned proposal.

Local authorities are becoming increasingly challenged with developing viable paths to decarbonisation. Digital processes including Geospatial Information Systems (GIS), digital twins and the use of procured and licensed data are becoming common place. This adds layers of complexity for organisations in navigating how data should be used, managed and how onward dissemination of these digital plans is achieved. As greater detail is sought in determining viable pipeline and investment opportunities, data complexity and risks around accuracy, licensing and sharing of data increase.

Local Area Energy Plans (LAEPs) are a key case in point. These are commissioned by local (or sometimes regional) authorities and create detailed scenarios, and decarbonisation pathways, across the entire energy system. These are very data intensive and complex projects, both in terms of inputs and outputs. This can create challenges for local authorities, requiring a relatively high level of understanding to scope and specify inputs and outputs. Furthermore, to keep the LAEP live and useful there is a need for in-house expertise or continued external support. LAEPs often require technical knowledge to understand, which means it is difficult non-technical individual to understand and therefore implement effectively and efficiently.

In a landscape with increasing access to data and shifting policy and legislative context, it is more important than ever that data is better understood and compatible across multiple applications. The Regional Energy Strategic Plan (RESP) function of the National Energy System Operator (NESO) is a key example of the need for local strategy and data to be compatible with wider strategy and data structures. This extends also into network utilities, industry, developers and investors; all of which will be seeking for certainty and confidence in outputs before acting on them. Everyone must be able to understand LAEPs in order to meet net zero goals effectively.

NEEDS aims to be a resource for local authorities reducing the complexity of procurement, and therefore the cost, of deployment of digital planning in developing local government strategy. Collaboration has been central to the creation of NEEDS. One insight gained from stakeholder engagement is aligning ambitions with what is possible within timeframes and budgets. The NEEDS process explores specific priorities behind the desire to commission a project, to maximise the value of the outputs and wider project lifecycle. It does this by capturing the requirements of a specification, to inform local authorities on key items to consider and procure.

NEEDS Process

Figure 1 summarises the decision flow which forms the backbone of the NEEDS process. A set of supporting guidance documents have also been included in the NEEDS pack which address key aspects of this process flow in the event the commissioning officers require further support. An Excel tool (NEEDS Data Mapping Tool) set is also provided with this flow embedded into it to help select appropriate criteria and semi automating the specification process.

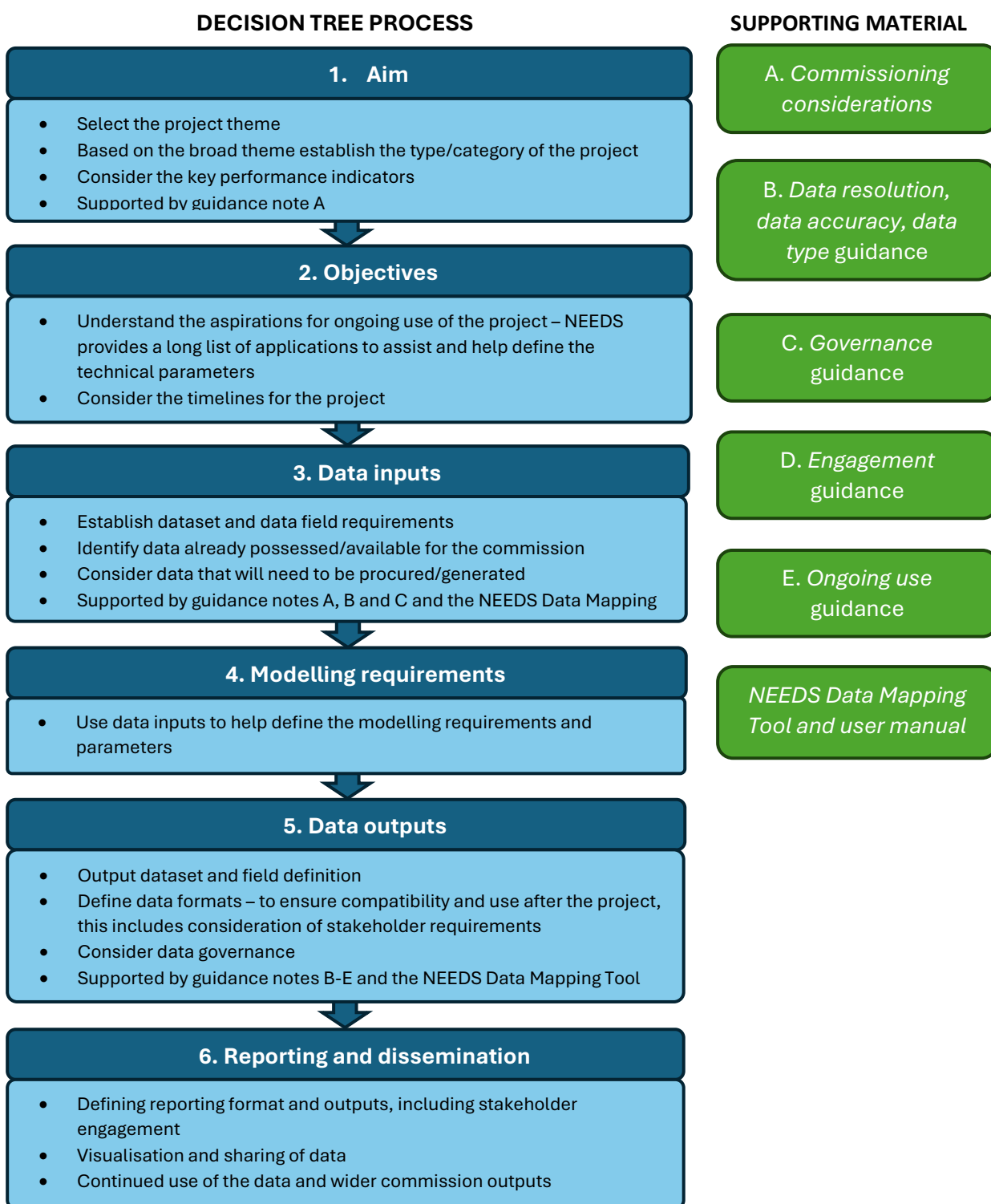


FIGURE 1: OVERVIEW OF THE DECISION TREE PROCESS AND DOCUMENTS THAT SUPPORT IT

Subsequent sections of this Briefing document describe each of the key steps above in more detail and a checklist is provided to help the commissioning officer as they progress.

Defining the Project Aim

The overall aim of the commission should be defined first as this will then determine the following steps. What type of plan is required and what it should cover.

The decision tree asks the commissioning officer to select the type of project (e.g. *a building project*) and then to further define its aims (e.g. *decarbonisation of local authority buildings*). A third step guides the commissioning officer into specifying more detail (e.g. *identify priority buildings for decarbonisation, identification of funding stream eligibility, potential to help alleviate fuel poverty*).

Figure 2 shows examples of these levels for a range of planning types. It categorises them based on the following terminology:

- **Theme** – 8 themes are included in NEEDS defining the overall composite aspects of the plan from taking a whole systems approach to a more targeted plan focussed on a sector or technology type
- **Category** – represents the “sub themes” that could be selected which will determine the type of plan within the theme, its depth of focus. E.g. for LAEPs it selects which stages should be covered, whilst for Generation and Storage it selects the scheme type and scale.
- **Application** – selects within the confines of the chosen Category a range of specific targeted areas of focus. Multiple applications can be selected. The aim is to bring further detail to the selection process which later on will be used to determine the possible detail, data categorisation and outputs that will be delivered.

Example:

I wish to commission a LAEP Lite which does not undertake a full LAEP but instead focusses on pipeline development of feasible solar PV sites and transport decarbonisation through EV public infrastructure development. I will therefore select Whole System – LAEP Lite – PV roof top potential, ground mounted solar PV, public charging infrastructure opportunities

(it should be noted that the first publication of the Excel NEEDS Data Mapping Tool does not include all Themes, Categories and Applications as it focusses on LAEP commissions).

Theme

Whole system	Buildings	Transport	Generation & storage	Industry	Network infrastructure	Built and natural environment	Place & community
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Category

• Stage 1-7 LAEP • Stage 1-4 LAEP • Stage 5-7 LAEP • LA level master planning • 'LAEP lite' • LAEP refresh	• Domestic decarb • Non-domestic/commercial decarb • Industrial decarb	• Public transport decarbonisation • Freight decarb • Car park charging • On street charging • Off street charging	• Rooftop renewables • Ground mounted renewables	• Hydrogen decarbonisation • Industrial decarbonisation • Large generation	• Heat networks zoning/strategy • Electricity network reinforcement • Gas decommissioning • Hydrogen	• Biodiversity • At risk habitats	• Network analysis • Capacity requirements • Profiling
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Application

Can include any items from different themes but also overarching items • Complete energy system baseline • Full energy system decarbonisation pathway • Prioritised areas and actions • Grid reinforcement requirements • Inform local plan	• Heat demand mapping • Planned development mapping • Identification and prioritisation of fabric retrofit requirements and cost • Domestic heat pump opportunity areas • Electrification of heat mapping	• Public charging infrastructure opportunities • Identification of potential PV canopies on car parks • Park and ride opportunities • Transport poverty identification • Driveway mapping for off-street EV charging	• Large scale ground mounted solar opportunities • Large scale ground mounted wind opportunities • Focus areas for smart meter deployment • Suitability for thermal storage • Suitability for electrical storage • PV rooftop potential	• Industrial clusters classification and heat demand mapping • Industrial opportunity areas • Heat Processes Decarbonisation - Commercial • Techno Economic • Water resources for Industrial, Commercial, Agri, Hydrogen • Abstraction	• Heat network opportunity areas • 5G Heat network opportunities • Green Heat Network Fund applications • Existing DNO network capacity and constraint mapping • Infrastructure coordination	• Biodiversity net gain impact • Identification of focus areas for air quality improvement • Resilience opportunity mapping • Health benefits quantified • Job creation	• Identification of at-risk communities • Alleviation of at-risk communities • Mapping of existing community schemes and groups • Community energy opportunity areas
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FIGURE 2: EXAMPLE OF THE THEME, CATEGORY AND APPLICATION SETUP

NEEDs as a process covers a large range of planning themes however the first instance of the tool focuses on LAEPs and therefore LAEPs are given further focus, and the different options are described below and aligned to the Energy Systems Catapult guidance¹.

TABLE 1: SUMMARY OF SOME KEY CATEGORIES FALLING IN THE WHOLE SYSTEM THEME

Category	Description
LAEP 1-3	Establishes standard baseline of the current energy system.
LAEP 1-4	Establishes a baseline of the current energy systems and examines multiple decarbonisation scenarios.
LAEP 1-7	Establishes a baseline of the current energy system, examines multiple decarbonisation scenarios, selects a preferred scenario and identifies priority projects and reports the selected pathway with assigned actions.
LAEP 4-7	Examines multiple decarbonisation scenarios, selects a preferred scenario and identifies priority projects and reports the selected pathway with assigned actions. Requires a baseline to be in place.
LAEP 5-7	Selects the preferred scenario, identifies priority projects and reports the selected pathway with assigned actions. Requires a baseline and initial scenario runs to have been carried out.
LAEP lite	Will tend to focus on specific aspects of 1-7 LAEP, tailored to precise requirements. Examples could include not as great a focus on stakeholder engagement or scenarios, whilst maintaining a strong consideration of pipeline.
LAEP refresh	Updates an existing LAEP. This can include updating the baseline data, running additional scenarios or creating a project pipeline. The need to update/refresh the LAEPs is noted in the ESC guidance.
Local authority level energy master plan	Requires a baseline to be established and presents a pathway to decarbonisation. Can be similar to an LAEP but is less standardised and will not test multiple scenarios, for example an industrial decarbonisation plan.
Regional level energy master plan	Larger geographic scope but otherwise similar to the Local authority level energy masterplan.
Project pipeline	Focuses on identifying near term projects to form a pipeline. Requires baseline data to be established but does not require full decarbonisation, instead using the baseline to establish near term projects.
Action plan	As a minimum, requires baseline to be in place and identified stakeholders to create low regret actions. Should be after a full LAEP and could be a specific refresh from an old LAEP.

¹ <https://es.catapult.org.uk/guide/guidance-on-creating-a-local-area-energy-plan/>

The following outlines the key items to then consider in development the specification further:

Communicating KPIs

A key aspect of most plans is to demonstrate delivery against the local authority's KPIs. Often this is the first stage of development when a plan is commissioned. However, there is considerable value in stating up front some of these and considering how the procurement process will deliver on them. These will vary by commission but examples include; *carbon targets, growth targets, revenue generated, rates of uptake of technology.*

Objective Definition

The selection of Applications described above should be clearly thought through in terms of depth and other factors including spatial and temporal limitations. These need to be communicated in the specification to provide definition, clarity and constraint to the delivery party within defined timescales and budget.

The *NEEDS Data Mapping Tool* auto-populates different applications for different types of LAEP. This is to help the user understand what is likely to be most important to focus on given the nature of the project, noting that this may vary depending on the local context. *E.g. industrial decarbonisation may be more relevant in some areas whilst it will be rural community decarbonisation in others.*

The NEEDS decision flow accounts also for the following items, all of which may impact cost and delivery times of the commission:

- **Understanding ongoing use:** how the outputs of the analysis will be used going forward, including considerations on how it will be managed in-house, disseminated externally and who the users will be. For example, will a clear action plan and next steps be required?
- **Applications:** these are the deliverables that are required, relating to precise technical aspects of the project. Examples could include supporting funding applications, identifying private wire opportunities for renewable generation, or identifying opportunity areas for community energy groups.
- **Timeline considerations:** period defined for both delivering the plan and any ongoing support or additional services post plan that may be required

Data

Data forms the backbone any digital plan. It also can impact cost, quality and the type of outputs considerably depending on factors such as:

- Source of data and whether this is open, licensed and which permissions are required
- Ongoing use of data including considerations around license costs, permissions, maintenance and rates of update
- Ownership of data sources and ongoing outputs
- Visualisation requirements including which platforms may be required to management visualise
- Sensitivity including GDPR, rights of dissemination and use cases for outputs.

The sourcing organisation's own digital capability will also be a key factor in whether it wishes to own/manage/hold data or whether it wishes to commission third party services. Capacity planning may also be a key consideration if needed and can be included in the commission.

Defining the aims and objectives helps understand the data requirements for a project. Being clear on data requirements and the management process for data is therefore critical to ensure a clear understanding between the local authority and commissioned delivery party.

There have been examples of local area energy plans commissioned where onward dissemination has been prohibited due to not fully appraising data licensing rights and obligations during the commissioning process,

Data resolution, data type and data accuracy are all important to consider, these are discussed in guidance document B².

It should be remembered also that large volumes of data are generated during energy and environment projects. Ensuring data is useable, accessible, and can be updated should be a key requirement of specifications. Data governance and associated structures are therefore also critical to have in place.

Items to consider include:

- **Output datasets/data field definition:** the *NEEDS Data Mapping Tool* helps define this, creating a standard item to append. This is linked to the application choices and provides a common thread between objectives and outputs.
- **Data format and cataloguing:** this is important in terms of ongoing use of data and outputs. For example, spatial data should be in formats compatible with the organisations GIS systems. The *Ongoing use*³ guidance document helps define these alongside related items of data schemas and metadata.
- **Stakeholder requirements:** consideration of any third-party requirements in terms of formatting, submissions and governance. *E.g. for LAEPs there is an expectation to delivery data to DNOs and to RESP which follow prescribed structures.*

The *NEEDS Data Mapping Tool* helps to define data inputs, as well as highlighting key governance considerations. Appending the outputs of this tool can help remove uncertainty from the process. The *NEEDS Data Mapping Tool* includes standard datasets and benchmarks to help decipher the current data landscape, whilst the *Data resolution, data accuracy, data type*⁴ guidance provides more details of the principles behind data requirements and inputs. This includes how input data can be checked and validated.

Modelling Requirements

The modelling requirements will vary substantially depending on the type of project. Aims, KPIs and objectives should define what is needed within the process, and the data inputs define what can be modelled.

Delivery parties often use different modelling suites to deliver plans which can mean the process and output formats vary. It is therefore important to be clear on expectations in terms of the objectives of the plans and deliverables expected. The specification should require a summary of

² Guidance B. Data resolution, data type, and data accuracy

³ Guidance E. Ongoing Use

⁴ Guidance B. Data resolution, data type, and data accuracy

modelling processes and assumptions (this would tend to be a technical appendix rather than a main reporting item). This is discussed further with case study examples in Guidance E⁵.

LAEPs typically have scenario-based modelling requirements, to assess and create different decarbonisation pathways (in accordance with ESC guidelines). Scenario-based models will have different factors and assumptions linked to them often tailored during the planning process. The extent to which different factors can be explored and adjusted is important to consider. With LAEPs there are three general types of scenarios that can be considered:

- **Target based:** this is the traditional LAEP scenario typology where a commission will explore the best pathway to hit a specific decarbonisation target date.
- **Technology based:** considers different key technologies to explore to deliver decarbonisation. This could include a hydrogen scenario, or a stronger emphasis on heat networks as opposed to individual heat pumps.
- **Deployment/deliverability:** this scenario type establishes what can realistically be deployed given support, previous deployment rates and the local supply chain. These are often some of the more complex scenarios requiring assumptions of feedback loops leading to greater deployment. They often require additional data collection and thus may require circling back to defining the data inputs.

The key objective of considering these options is the extent the desired scenarios may differ from each other and a normal modelling process as well as how reliant they may be on bespoke or local authority owned data sets to ensure accuracy. The risk of not considering this to the local authority is in potential disputes, variation claims and outputs that do not meet requirements.

Using Multi-Criteria Analysis and Pipeline Focus

For LAEPs there is increasingly a question as to whether scenarios should be the focus of modelling or establishing a pipeline of viable projects. This would generally promote more flexible modelling approaches such as multi-criteria analysis, allowing more flexible interrogation of options than typically static scenario model runs. This is a useful approach which can tailor the modelling process to add weighing's to the model to ensure the resulting pathways and pipeline meet the key criteria and KPIs.

Reporting and Dissemination

For data rich projects it is important to consider how outputs are effectively communicated. This includes:

- **Reporting format:** these can include a summary report, detailed technical report, prospectus reporting format, stakeholder engagement material and presentations. It is also important to consider any specific requirements relating to accessibility.
- **Viewing and sharing data, and continued use:** considers how data will be shared and viewed both within the council and externally. The guidance notes on *Ongoing use*⁶, *Engagement*⁷, and *Commissioning considerations*⁸ provide useful context here, covering aspects such as digital

⁵ Guidance E. Ongoing use

⁶ Guidance E. Ongoing Use

⁷ Guidance D. Engagement

⁸ Guidance A. Commissioning considerations

twins and in-house hosting. The *Governance*⁹ guidance note is key to consider alongside this, as there are likely to be various factors to consider for any ongoing sharing of data. As minimum this is likely to require understanding of OS terms of use.

Selecting tools for dissemination is often a critical but omitted consideration that deserves more attention. For example, the selection of a digital twin may provide key benefits in terms of visualising data and holding planning data, but ongoing maintenance, license and access costs need consideration.

Summary and Checklist

A checklist has been provided for helping the local authority's commissioning officers to ensure they have considered all the relevant aspects.

It has been structured in alignment with typical procurement document structures which may deviate slightly from the NEEDS workflow (which is designed to support the decision-making process).

TABLE 2: SUMMARY CHECKLIST OF ITEMS TO INCLUDE IN A SPECIFICATION.

Context	
Existing strategies, policies and previous work	Appraise and summarise any relevant strategies, policies or pre-existing studies which you feel are useful in setting context and leveraging previous work done. For example, target dates for decarbonisation, historic energy masterplan, environmental enhancement strategies, and local plans. This does not have to be extensive but should highlight key elements to consider/are important to the project
Ongoing work, focus areas, growth and evolving policies and strategies	Alignment is key and it is thus important to highlight any items that should be considered or will influence/be influenced by the work. This includes future growth plans, and strategies the work is expected to feed into or inform. This will often inform the modelling, data and engagement processes.
Project spatial, technical and temporal boundaries	Define the geographic extent and vectors (e.g. heat, building stock, transport, electricity networks, renewables or the whole energy system) it covers. It should also include any temporal elements (e.g. decarbonisation of the energy system by 2040, or identification of projects which could be delivered by 2030) and what is in and out of scope (e.g. just concerned with council assets or the entire local authority).

Aims, objectives and outcomes	
Aim	In the LAEP example this will often be related to establishing the most effective decarbonisation pathway for a local authority. Detail is important here, if the context defines a decarbonisation date this would be the target but there may be a need to decarbonise the council's own

⁹ Guidance C. Governance

Aims, objectives and outcomes	
	stock faster. Whilst in other situations it may be based on supporting policies, supply chain, or budget availability.
Objectives	For outcomes to be effective, objectives related to precise project identification, long and short listing, as well as different assessment criteria are key to outline. In the appended <i>NEEDS Data Mapping Tool</i> , the list of applications can help with the consideration of objectives and associated outputs. <i>In a survey of local authorities carried out during NEEDS project pipeline and funding availability were found to be the most important outcomes from LAEPs for local authorities (this is also true across many other study typologies covered by NEEDS).</i>
Actions	Most commissions should have a clear set of actions coming out of them. This will often be linked to the objectives but highlighting that a clear list of well-defined actions, next steps and potential projects to progress is key.
Cross coordination with other projects, initiatives or departments	Consideration of work that should be coordinated with, for example aligning infrastructure deployment to planned roadworks, growth and planning, influence and alignment with wider strategic work. This is linked to the context and stakeholder engagement.
Secondary benefits/analysis	Highlight any items that should be explored in addition to the core aim of the commission. For a decarbonisation plan this may include wider elements such as health benefits, climate resilience, embodied carbon analysis, impact on the supply chain and job growth.

Modelling	
Scenario requirements	Many forms of planning which rely on modelling, including LAEPs, use the process of scenarios. Traditionally LAEPs have been focused on running multiple scenarios for decarbonisation, however, with a shift increasingly towards delivery and project and pipeline it is important to consider the role of scenarios when defining a specification. Defining scenario type is also key; specifying if the focus should be on different cost assumptions, different technologies, different target dates, different levels of policy support, or the ability of the supply chain to deliver a decarbonisation strategy.
Key Performance Indicators	Understanding and identifying key KPIs helps to inform modelling requirements as well as input and output data requirements.
Modelling and analysis methods	This is often the basis of any technical response to an ITT and allows practitioners to demonstrate how their standard methods will be adapted to the local context. Understanding what key modelling parameters are will influence the data which needs to be collected. For example, in LAEPs, local costs for different technologies

Modelling

	may be a key modelling parameter – influencing the data collection process. Whilst an organisation would not be expected to explicitly list these, the specification could outline some key items and put a requirement for a technical workshop exploring the modelling parameters. This is linked to reporting, where a technical appendix is a key item to define to ensure these items alongside the assumptions and modelling process are fully captured.
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Data

Input and output data	Outline any data which is expected to be made available. Within the commission having practitioners outlining which data will be used is helpful for understanding the approach and the extent to which local data is anticipated to be used. The NEEDS Data Mapping Tool allows creation of standard data specification requirement, focusing on the LAEP use case.
Data review, enhancement and validation process	Establishing how practitioners will move beyond standard data inputs to enhancing and building confidence is important. This increases confidence in outputs from a project, where generally the higher the data quality used in modelling, the better the outputs. A specific question in an ITT relating to these factors is recommended.

Engagement

Stakeholder mapping and engagement plan	For many projects stakeholder engagement will be key, particularly if there is a desire to move towards delivery. A question specifically relating to the role of stakeholder engagement plan is often key. This provides opportunities for practitioners to highlight where, how, and the impact of engagement. It also can provide useful insights into the practitioners' local experience and knowledge.
Engagement type	If particular engagement sessions and types of engagement are required these should be outlined. This could include targeted workshops, 1-2-1 calls, ad-hoc meetings, or surveys. What is key is to highlight the engagement expectation. This often has a high cost in consultants processes, and it is also important to consider how the engagement will inform the commission, its outputs, and its ongoing use.
Engagement timing	Any specific timing requirements should be considered. For example, there may be specific stakeholders the council wishes to onboard early. If this is the case it should be highlighted in the ITT.

Deliverables	
Reporting	Detail any reports that are expected, including if supporting high-level summary report is required. Any accessibility requirements should be listed.
Outputs	Outputs should in part be defined by the objectives and aims. It is important to consider what is being commissioned as to the extent of outputs, for example if commissioning a LAEP this will not have the same level of technical and economic analysis as a feasibility. Ideally there will be a standard document that can be referenced for project outputs (for LAEPs the Energy Systems Catapult stage 1-7 process ¹⁰) with any variations or particular focus then being highlighted. A clear and costed project pipeline being a key example of this for the LAEP process. Metadata and clear guidance of data formats, defined in the data items are key to the outputs for ensuring they can be used beyond the commission and integrated into wider council systems.
Visualisation and tools	It should be noted what visualisation is expected, if a digital twin is required this should be clearly stated. Any tools selected for visualisation should be considered as part of the guidance evaluation.

Project management	
Timeline	As well as providing standard insights into the anticipated project length and kick-off date this should highlight any key dates that need to be met, such as publication of a Local Plan, requirements within funding, alignment to key stakeholder strategies (such as publication of Distribution Future Energy Scenarios [DFES]). Additionally, as with all commissions a detailed Gantt highlighting any dependencies and stage gates should be a part of any specification.
Review process	Formats of documents anticipated timings, the number of review cycles are all important items to consider. Also, highlighting the need for key stage gates and interim reviews can also be included.
Frequency of management meetings	Highlighting anticipated frequency of project management meetings is important. This should also consider the form of the meetings, such as whether they are online or include in person meetings.
Risk register	A risk register is a key item of any specification. This should include requirement for specific consideration of the technical and stakeholder risks posed by the specific project as well as standard project management risk mitigation, which should be expected of all practitioners. This also allows practitioners the ability to highlight any complexities or challenges they see in the specification.

¹⁰ <https://es.catapult.org.uk/guide/guidance-on-creating-a-local-area-energy-plan/>

Additional items	
Budget	A clear budget is important, particularly in non-commoditised work. In the case of LAEPs the process and outputs can be heavily influenced by budget, transparency thus helps bidders match their approach to both the budget and requirements.
Licencing requirements	Data created, used, or purchased to complete the work may have licence requirements related to them. If it is desired that all data used and generated should be available to the council and for any third parties carrying out work for the council this should be made clear. It is important to ask for clarification if there will be any ongoing costs or licencing requirements related to data. This also applies to any software, such as digital twins, related to the commission.
Scoring criteria	With non-commoditised pieces of work, it is important to consider the split between a cost and quality ratio. It is important that this split is considered so the market does not inadvertently ignore quality considerations by driving value down through cost reduction.
Social value	Is a very important item to consider. For many of the projects within NEEDS they have social value at their core, however, they may not be well suited to a standard social value matrix. To maximise the social value of a project a degree of flexibility is recommended in how social value is considered – so alongside completion of a scoring matrix the ability to provide a freeform response is recommended.
Standard requirements	It is expected that local authorities will have their standard assessment areas, typically methodology (which can be broken down to subsections such as stakeholder engagement and technical items), project management, experience and budget.

Governance	
Data governance	Data governance is key to the data rich project typologies covered by NEEDS. Ensuring there is a question in an ITT relating to this is very important to include as are any internal or partner bodies governance standards. This includes consideration of any input data that is going to be provided to a practitioner as well as the outputs practitioners provide at the end of a project.

National Energy & Environment Data Specification

A. Commissioning considerations

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Acronym/Term	Description
AZP	Advanced Zoning Programme
DFES	Distributed Future Energy Scenarios
DNO	Distribution Network Operator
DSA	Data Sharing Agreement
DSO	Distribution System Operator
DT	Digital Twin
EPC	Energy Performance Rating
EV	Electric Vehicles
FTE	Full Time Equivalent
BLA	Greater London Authorities
GIS	Geospatial Information System
GNO	Gas Network Operator
HN	Heat Network
HNZ	Heat Network Zoning
HP	Heat Pump
ITT	Invitation To Tender
LSOA	Lower layer Super Output Area
NEEDS	National Energy Environment Data Specification
NESO	National Energy System Operator
RESP	Regional Energy Strategic Planning
RFI	Request for Information
Schema	A blueprint that defines the structure and organisation of data
UKPN	UK Power Networks
UPRN	Unique Property Reference Number

Purpose of Commissioning Considerations

This section is designed to supplement the Briefing Document and provide guidance on the wide number of considerations when developing a procurement specification and setting out a strategy. It is aligned with the National Energy Environment Data Specification (NEEDS) steps (more detail is provided in the NEEDS Briefing document) summarised in Figure 1 which provides the workflow for developing a plan.

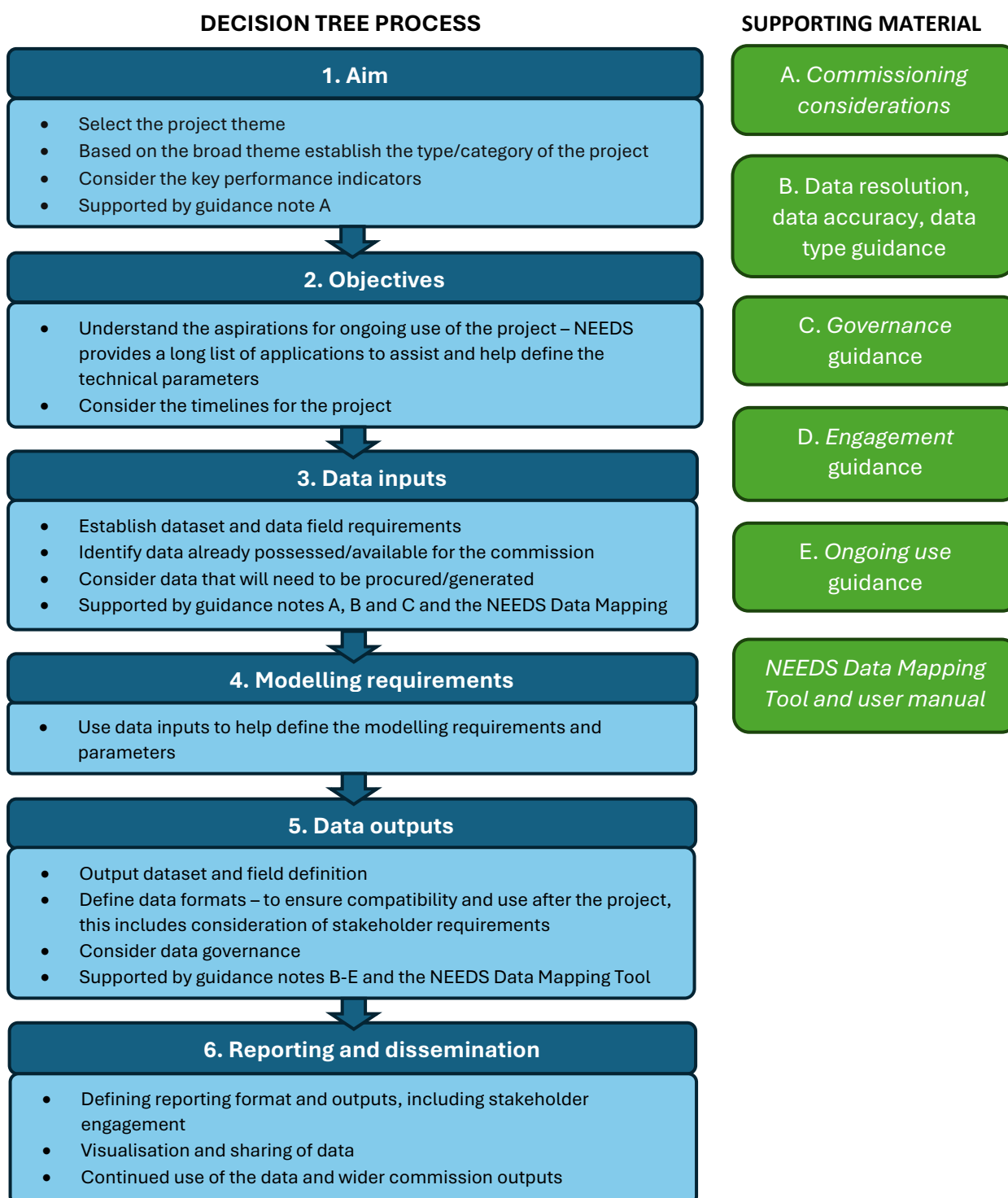


FIGURE 1: OVERVIEW OF THE DECISION TREE PROCESS AND DOCUMENTS THAT SUPPORT IT

Figure 2 summarises the 4 key areas of consideration when determining the strategy and what is required from the commission:

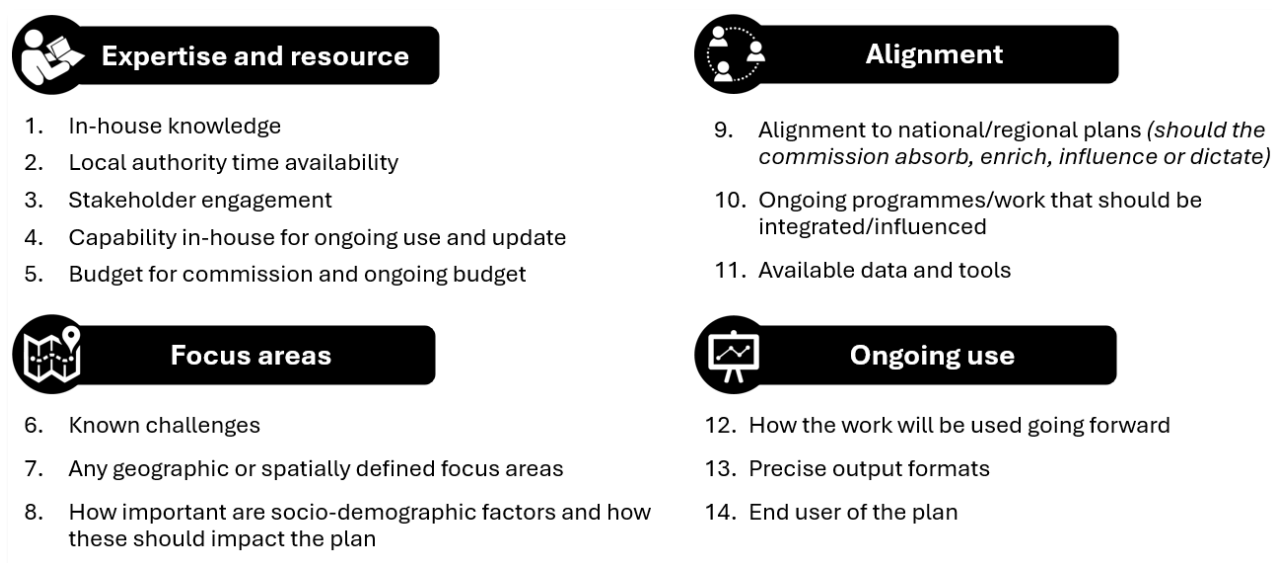


FIGURE 2 FRAMING QUESTIONS FOR NEEDS

This guidance looks at each one of these areas and summarises the key considerations.

Expertise and Resource

Local authorities have varying degrees of in-house knowledge and expertise when developing energy and decarbonisation strategies. By carefully considering the current capability and aspiration for developing capability a strategy can be developed which informs the information to be provided by the local authority, the skill sets needed from the delivery party and the strategy for capacity building.

TABLE 1 EXAMPLES OF EXPERTISE AND RESOURCE CONSIDERATIONS

Options	Description	Outcome
Resource with relevant knowledge assessment and specialisms	Consider skill sets across: • GIS • Data • Energy domain • Buildings • Transport • Smart systems • Heat decarbonisation • Commercial deployment • Funding • Modelling.	Gap assessment of skills required to be procured and capacity development requirements to be included in the commission.

Options	Description	Outcome
Governance maturity	Governance is critical to data management in particular sensitive and licenced data. Immature systems may lead to issues in holding and managing data. Solutions should be considered including digital twins, GIS, IT structures.	Identify governance structures required and either implement internally or select a third-party system that mitigates requirements. Further details can be found in the governance guidance document ¹ .
Legacy work done	Identify previous work done that will be useful and feed into the plan. This will avoid duplication and add value by leveraging previous work.	Make specific reference to work done that can be used and compile a package of work or point to relevant links.
Data and information	Assess any existing data that will be useful for the plan this could include for example existing retrofit decarbonisation plans, building consumption data, demographic information, funding allocation and current projects.	Accelerates baselining and ensures far more accuracy in planning.
Time and resource	Consider how much resource is needed and can be pre allocated and team structure. The depth and scale of planning will have different requirements on FTE support including project management, internal team specialist support and senior stakeholder reviews and sign off.	Developed resource plan and clear expectations set on resourcing requirements from third parties. Time allocated to team specialists, legal, comms, finance, energy, environment, planning, transport departments etc.
Stakeholder engagement	Refer to Guidance Section D “Engagement”. A stakeholder engagement plan should consider all parties that will provide value, input to the plan, review the planning process and receive the outputs; the level of engagement and who will be engaged and how the engagement will be carried out.	Developed stakeholder engagement strategy with identified stakeholder classification and clear definition of requirements in the specification with appropriate budget allocated.
Budget allocation	Budget will determine the depth volume and quality of outputs as well as the digital medium for holding and dissemination of the plan, Consideration needs to be given to following: • Resource required • Stakeholder engagement events and method • Data licensing and procurement • Whether a third-party digital twin is to be procured • Ongoing support post plan including licensing, O&M platform costs	Budget established with is commensurate with market rates for the type of plan to be commissioned.

¹ C_Governance Guidance

Options	Description	Outcome
	Post planning activities including feasibility assessment, dissemination events and follow on stages.	
In house capacity for management	In addition to the resource evaluation to determine requirements to deliver the plan, post plan management needs to be considered. This includes skill sets such as: - Ability to manage GIS data, licensing and governance - Dedicated individuals to communicate the plan internally - Ongoing maintenance and refreshes - Monitoring and evaluation of progress.	Post planning resource assessment and strategy.

Alignment

Aligning the plan to other strategies and developments will be key to success. The wider environment is currently seeing lots of change and activity in this respect, examples being Advanced Zoning Programmes (AZP), Ofgem ED3 submissions for DNO network investment, RESP local strategies, GB Energy Local Power Plan and central government funding initiatives. There may also be a wide range of local plans underway including transport and growth plans. The key steps in considering these are summarised as:



FIGURE 3 CONSIDERATIONS FOR ENGAGEMENT ON NATIONAL AND REGIONAL PLANS

Examples of how National, local and regional plans could be relevant are summarised in Table 2 .

TABLE 2 EXAMPLES FOR ALIGNMENT TO NATIONAL/REGIONAL PLANS

Options	Description
HNZ	If HNZ has been completed, output should be absorbed into the plan. If not, the commission can support in identifying priority zones and influence future HNZ. Note that HNZ uses building-level analysis, while LAEPs and detailed <i>applications</i> often use property-level data. This difference should be accounted for in planning.
AZP	AZPs are currently in pilot phase and offer more granular insights than HNZ. AZP covers areas agreed by DESNZ as focus opportunities to progress large heat networks. If an AZP has been carried out in your area, its outputs can be absorbed into the plan to strengthen elements, such as heat network proposals, and secure future funding. Ideally, Geopackages or Shapefiles can be provided.
DFES	The output of the LAEP can enrich the DFES by providing detailed, location-specific insights into future energy demand and technology uptake. LAEPs help influence and dictate where strategic investment is needed across the network. Risk: DSOs typically require data in a data schema. Ensure the ITT explicitly requests that practitioners populate these data schemas so that the DSO can absorb the data.
NESO	Strategic planning is in the process of being finalised at a national level. The organisation should remain engaged with NESO developments to ensure LAEPs and similar strategic studies are positioned to influence and align with emerging whole-system strategies.
RESP	RESP is a new framework led by NESO to integrate regional energy needs into national planning. LAEPs will influence RESP and inform investment decisions. The organisation should engage early to enrich RESP with local priorities and influence its direction. Over time, RESP may dictate how regional infrastructure is planned and delivered.
Regional Plans/growth strategies	It is important that any project is cogent when considered alongside wider strategy in area. This is similar to the importance of consider the Local Plan team, outlined in section 2.
Other Sectors	Whilst the focus is on energy related alignment, other sectors should be considered early to ensure alignment where possible and that there aren't any missed opportunities. Regional Transport plans will have related infrastructure requirements. Water is also becoming increasingly linked to energy, the rise in demand from data centres to provide cooling or the importance of water in any hydrolysis related hydrogen production being two examples.
Local policy and strategy	This may include local growth plans and strategic planning frameworks that are currently required by Government as part of devolution agenda, and locally developed policies on infrastructure, climate, environment, and industrial strategy for example.
Retrofit programmes	This may include interventions and typologies, current programme status, and funding allocation. These can be absorbed into the plans to support decarbonisation strategies and provide a clear understanding current standpoint.

Options	Description
Costs and deployment rates	Practitioners commonly use benchmarks and national guidance to assess, and cost interventions (e.g. retrofit). However, if the organisation holds cost and deployment rate data which better reflect the local context or for other reasons are preferred to use, it is worth to highlight this in the ITT. This ensures that the plan is based on realistic assumptions for the area and strengthens plans.
Planned infrastructure	Includes any planned heat network, energy, transport or utility infrastructure projects. Depending on the progress, these plans can be absorbed into the project <i>application</i> but also influence the planned infrastructure project. Whole-system plans can help maximise efficiency and minimise disruption, particularly where coordination and shared investment are possible (e.g. aligning heat network routing with scheduled roadworks).
Cross political boundary	E.g. heat networks which cross administrative boundaries, which is commonly seen if the heat density and heat source are in close proximity but in different administrative areas.
Specific technical focus areas	Any areas where a specific focus already has been undertaken e.g. deployment of data centres, heat pumps, renewable generation
Any ongoing commissions/ studies	Existing strategy studies e.g. transport infrastructure plans which should be absorbed
New developments/ growth plans	Any information which the organisation holds relating to new developments and growth plans and associated timelines as well as related infrastructure.

Available data from these various plans and any others identified should be explored and if deemed relevant obtained in a structure for inclusion or made reference to if the requirement is for the procured party to do this (and are able to).

Internally for a whole system commission, it is likely that data sits across several teams in the organisation. Team structure and the data they hold, differs between organisations. An example of which teams are likely to hold relevant data, is shown in Figure 4.

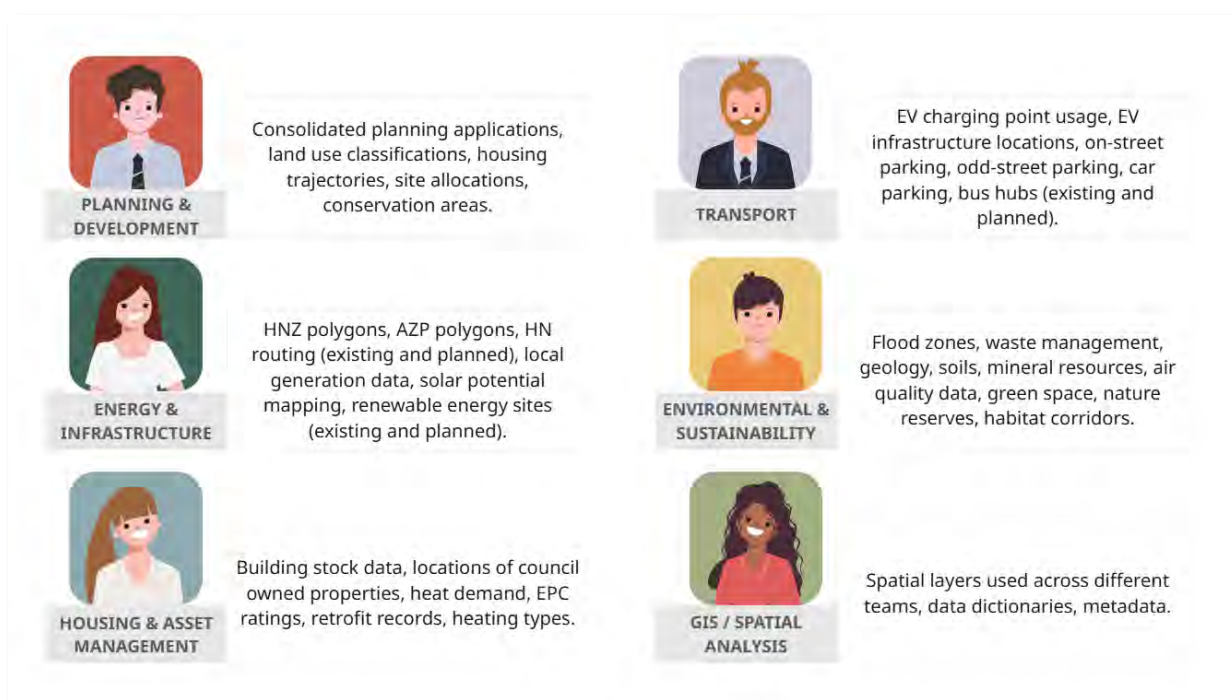


FIGURE 4: TEAMS WHICH ARE LIKELY TO HOLD THE DATA WITHIN THE ORGANISATION

Data Quality and completeness of the data which the organisation holds can vary significantly and should be carefully considered before determining whether it should be included. **Permissions** should also be validated to ensure not only that the data can be used in the planning process but also that the outputs derived from it can be released. This is particularly relevant where third party data is being considered. The following table summarises some of the key considerations. Across all the available datasets it is important to consider if it is possible to use the data for the study. Considerations are outlined in Table 3.

TABLE 3 EXAMPLES FOR CONSIDERATIONS WHICH RELATE TO DATA

Options	Description
Governance	See guidance ² for detailed summary.
Licencing considerations	Carefully assess the licensing provisions and terms for each data set to ensure relevant permissions are in place.
Confidence and validation assessment	Assess the quality and confidence in the data and its relevant to the planning process – will it add value?

² C_ Governance guidance

Focus Areas

There may be a range of local and regional aspects that the local authority wishes to be considered in the plan that may set local context or are relevant to other plans and strategies being developed. These items are always worth bring to the attention of prospective delivery parties. Examples of known areas typically raised in LAEPs are summarised in Table 4.

TABLE 4 EXAMPLES OF KNOWN CHALLENGES

Options	Description
Supply chain	Known restrictions in the area that may impact projected deployment rates will be impacted. Opportunities for green jobs in the area and growth in the area.
Ability to respond to funding opportunities	Alignment of pathway and pipeline outputs to current funding availability to be able to implement near term projects quickly.
Funding gaps	Funding gaps known that may present barriers to project pipeline deployment.
Capacity building	Capacity building requirements to ensure a successful delivery programme post plan.
Grid constraints in the area	Consideration of electricity grid constraints, current and projected in the future that may hinder deployment of low carbon technologies at scale. Identifying opportunities for flexibility through smart systems.
Legacy items	Known historic issues which the organisation have faced or areas where the organisation have been hindered before – e.g. infrastructure, planning, environmental issues or community resistance to change.
Senior buy-in	Evidence required for senior buy in and support.
Growth and redevelopment	Areas of planned growth, such as housing or commercial sites, including areas for regeneration,
Ownership	Consideration to land and building ownerships e.g. significant landlords in the area that should be consulted or large industrial stakeholders.
Geographic concentration	Areas where there the geographic context and density provide a natural focus area (e.g. high density of buildings, energy demand, fuel poverty, commercial zones etc).
Heritage and conservation areas	Areas where sensitive approaches may need to be taken due to planning restrictions
Land classifications	Areas defined by agricultural land grade or other classification which may affect development potential, planning permission or energy infrastructure suitability.
Demographics and community	Specific focus areas e.g. fuel poverty alleviation, ethnic considerations, access to transport systems (and transport poverty), targeted able to pay solutions, health and wellbeing, skills and training. Diversity, Equality and Inclusion.

Ongoing Use and End Users

Ongoing use and management of the plan post-delivery needs careful consideration including any specific requirements to be put in place during the planning process. This may directly influence the capability to be procured and the tasks to be delivered. A summary of considerations is below in Table 4.

TABLE 5 EXAMPLES OF ONGOING USE AND END USER CONSIDERATIONS

Options	Description
Standalone one-off plan	Consider how the plan will be stored, retained and communicated. There is low cost of onward management and maintenance.
Kept live and used for context across multiple other programmes	Considerations of refresh periods, data update mechanism and version control are important. Precise definition of output format and structure is needed to support ongoing use required.
Input to next stage LAEPs	If early stage (e.g. Stage 1-4) LAEP commissioned, then consider the data structures, platform and dissemination process to deliver to a party for the next stages.
To inform funding calls	Precise consideration of output required to ensure they align with specific requirements and expectation for relevant funding opportunities.
Stakeholder engagement	Based on the stakeholder engagement plan consider the formats, media and data dissemination processes required including the use of third-party digital platforms
Output formats	Consider data structures, report structure, visualisation techniques and messaging. Consider alignment with current internal processes, IT systems and departmental reporting structures. Factor in aspects such as whether a GIS platform is needed, shapefiles are to be delivered, tabulated data, and what resolution and scaling outputs should be in to be able to be used by different parties.
Output components	Consider the use of a report and its structure, the version control, headings, level of detail. Whether maps should be included, their format, colouring, resolution. Should tools such as Power BI or ESRI be specified? Digital twin tools? Outline business case documents?
End users	There may be a wide range of end users for the plan, and their needs should be carefully considered from the outset to ensure there are no issues with the associated formatting and output components. A dissemination strategy should also be considered e.g. communications, issuing of the report or even setting up a digital platform for wider access and promotion. Example end users include: Other local authorities and other departments within the local authority, RESP, DNOs, housing authorities, community groups, investors, consultants, landlords, industrial cluster owners.

Digital Twins

Special consideration is given to digital twins. The term digital twin is a broad term often referring to digital visualisation platforms rather than operational digital twins used in industry. There are a variety of offerings now on the market which could be seen to greatly enhance the experience of working with the plan.

Advantages: Digital twins can be used to distribute plans in a highly visual way without disclosing background data. This mitigates the need to distribute source data and manage it with third parties whilst enabling wider dissemination and collaboration. They may also be used to define the planning process and in some cases are free to access for local authorities

Considerations: the ongoing cost should be carefully considered, including whether there are any license restrictions in using the data or giving access to third parties. Longevity and maintenance support will be key for long term management.

National Energy & Environment Data Specification

B. Data Resolution, Data Accuracy, Data
Type

July 2026

Version 001

This report has sponsored by the **Local Net Zero Hubs** and has been published by the **North West Net Zero Hub** supported with funding from the **Department of Energy Security and Net Zero**.

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Acronym	Description
DFES	Distributed Future Energy Scenarios
DSA	Data Sharing Agreement
EV	Electric Vehicle
GDPR	General Data Protection Regulation
GIS	Geospatial Information System
ITT	Invitation to Tender
LAEP	Local Area Energy Plan
LiDAR	Light Detection and Ranging
LSOA	Lower layer Super Output Area
MPAN	Meter Point Administration Number
MSOA	Middle layer Super Output Area
NEEDS	National Energy Environment Data Specification
OA	Output Area
OS	Ordnance Survey
PSGA	Public Sector Geospatial Agreement
SSSI	Site of Special Scientific Interest

Introduction

Digital planning is inevitably based on a “data heavy” process including utilising multiple sets of input data, modelling and producing output and meta data in the form of a digital plan. A robust data strategy is therefore critical to successful planning and presents one of the most significant risks in quality issues and barriers to dissemination or breaches of governance including GDPR.

This subsection covers in brief the key considerations for implementing a data strategy and ensuring this is properly communicated in the specification.

- 1. Data inputs:** the ITT should establish resolution requirements from the start by specifying spatial and temporal resolution of input data (e.g. property level, postcode level, hourly, annual). This helps practitioners understand the level of granularity which is needed and ensures that data sources are appropriate and consistent with the plan’s objective.
- 2. Modelling requirements:** the ITT should outline that the resolution is preserved through the analysis. Practitioners should define how resolution choices affect the accuracy and relevance of the outputs.
- 3. Data outputs:** the ITT should define the expected resolution of outputs to ensure they are usable by the organisation and stakeholders, ensuring that the outputs retain the necessary detail for local decision making and support and integrate with other spatial and energy plans.
- 4. Reporting and dissemination:** the ITT should outline expected level of resolution for reporting (e.g. maps, tables). For Local Area Energy Plans (LAEPs) this is commonly aggregated to Lower layer Super Output Area (LSOA), but the local context may mean that another level of aggregation is desirable.
- 5. Permissions and governance:** should be considered and compliance with license and statutory.

The topics of Data Resolution, Data Access, Data Type (categorisation) are explored further below.

Data Resolution

The scale and resolution of data should be carefully considered when undertaking the baselining and then aggregating for modelling and determining the scale and resolution for dissemination of outputs.

Figure 1 Summarises the different resolution layers of data typically used for LAEPs.

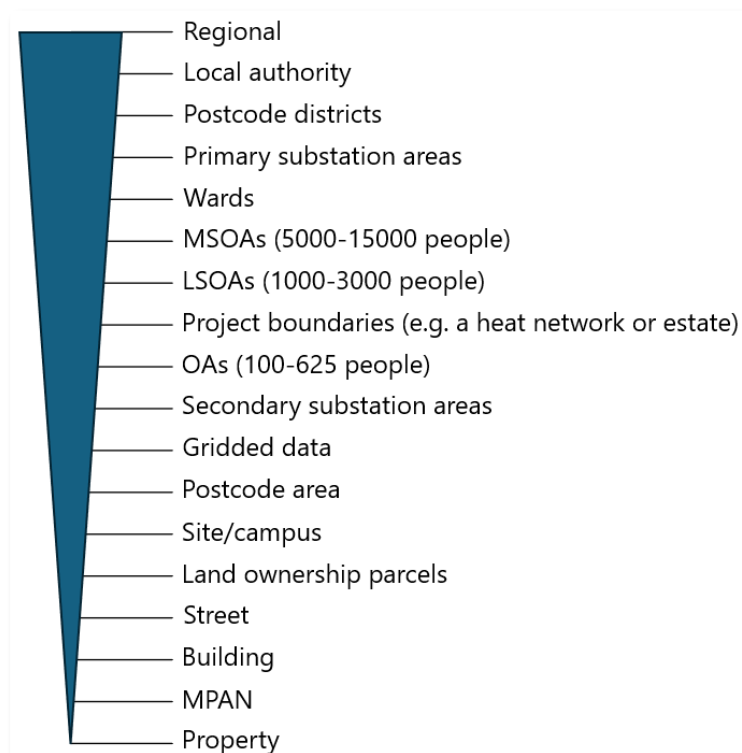


FIGURE 1: EXAMPLE DATA RESOLUTIONS – WITH LARGEST BEING REGIONAL LEVEL AND SMALLEST PROPERTY (MSOA – MIDDLE LAYER SUPER OUTPUT AREA, OA – OUTPUT AREA, MPAN – METER POINT ADMINISTRATION NUMBER)

A key consideration is to understand what the most detailed resolution possible is then determine a strategy for aggregation. It is easier to aggregate high resolution data, whilst potentially not possible to bring resolution to aggregated data. Thus, having **base data in the most detailed resolution possible** is normally preferential.

Third party data sources that provide additional context and clarity should be considered. For example, Ordnance Survey (OS) Mastermap data is often a key source of high-resolution data, meaning an OS Public Sector Geospatial Agreement (PSGA) is a standard requirement¹. OS is also expanding to a more detailed building stock model, the National Geographic Database (NGD). This contains fields relating to building age, use type, and building material – etc.

¹ The OS PSGA is a key underlying requirement for nearly all non-open-source spatial data in the UK. It is explored further in the Governance guidance document.

Measured vs Modelled

Whilst Mastermap can be considered a source of actual measured data (being the standard behind many legal items such as planning documents), NGD includes many modelled fields. This consideration applies to differentiation between modelled and measured data is important to keep in mind throughout the commissioning as measured data is often more accurate but may not cover all areas required. Different technical and commercial areas of the plan may require varying levels of granularity.

Example: UK heat network funds require street level summaries, whilst to feed outputs of LAEPs into Distributed Future Energy Scenarios (DFES), LSOA level data is preferred. These two resolutions cannot be moved between easily but aggregating property level data to these resolutions is straightforward.

Aggregation to spot errors and calibrate data

Being able to aggregate can be used to **identify likely errors and validate/calibrate data**. Many national level datasets exist at LSOA or Middle layer Super Output Area (MSOA) relating to items such as building stock, car ownership, socio demographics, and energy consumption. Aggregation of finer resolution property level information to this resolution is a key way to identify any potential errors in data, which can then be addressed to improve accuracy and confidence.

Governance and data management

Items to be aware of with high-resolution data, such as property level information, include ensuring the appropriate governance and agreements are in place. Therefore, special consideration should be given to the following:

- Data Sharing Agreements (DSAs)
- Commercial sensitives/ Terms of use
- General Data Protection Regulation (GDPR).

The emergence of accurate data including personal data sets

Data sources such as Smart Meter data are increasingly recognised as a key data source to better inform energy transition based on actual consumption. Organisations such as DNOs are increasingly using this and publishing aggregated outputs. Sourcing directly is possible but again special attention is needed when considering permissions.

Data Accuracy

Accuracy and resolution of data are interrelated. Accuracy in data can vary significantly, and so can the confidence associated with it. To ensure reliability, the ITT should request that practitioners validate key datasets, or at least assess the confidence in them. Items which impact accuracy and thus confidence in data including:

- **Completeness** – evaluating the range of coverage and any gaps. *Example - non-domestic EPCs cannot be relied upon to capture all non-domestic properties, as the data has a low coverage of UK non-domestic buildings.*
- **Consistency** – a dataset can contain inconsistencies. *Example - EPC data (which forms the basis of many building models) can vary considerably, this may simply be down to the assessor in a particular area.*
- **Precision and proximity** – of co-located sites may mean data is not accurate. *Example – a doctors surgery located on a hospital complex may be incorrectly allocated the demand of the hospital.*
- **Timeliness** – all analysis is going to rely on data which is not current. The age of the data and how often it is refreshed will inevitably impact analysis. *Example – commodity-based cost data can vary considerably in an unstable market.*

Appropriate allocation of budget and resource should be considered in the commission to allow for data cleansing and aggregation to mitigate the items above and ensure a robust plan is developed based on a clearly understood data set.

Figure 2 summarises the relationship between accuracy at scale and project development as it matures.

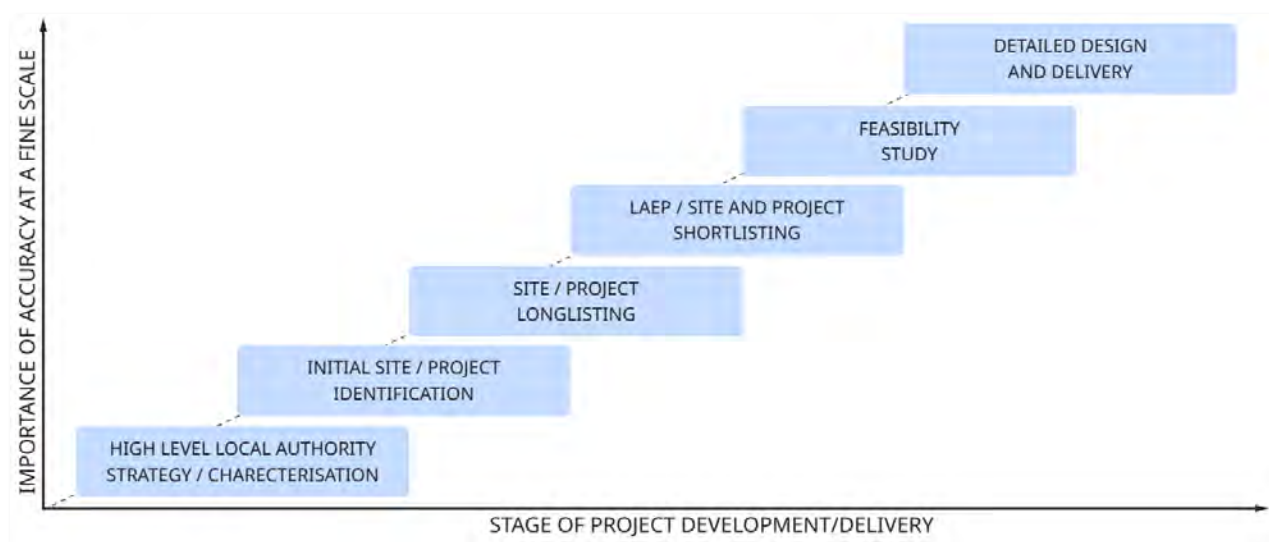


FIGURE 2: IMPORTANCE OF ACCURACY AT A FINE SCALE

Some example data types are outlined below in Table 1

TABLE 1: EXAMPLES OF HOW DATA ACCURACY MAY DIFFER ACROSS DATA SETS

Type	Description and examples	Implications and impact
Modelled / benchmarked data	These are often used when there is a gap in existing data or where future projections are modelled. Examples include building stock models, Electric Vehicle (EV) uptake, Future Energy scenarios and Distribution Future Energy Scenarios. Data should be validated to increase confidence.	The accuracy can vary significantly depending on input data, assumptions, and validation approach.
Modelled / benchmarked with local insights	Enhanced modelled/benchmarked data by applying local knowledge and insights.	Significantly strengthens the data, often both in terms of accuracy and precision.
Measured and recorded data	Often required for detailed applications. Examples include gas and electricity data (e.g. annual, peak demand, hourly and half hourly data), building stock	Higher accuracy and precision
Precise accurately defined areas	Often key spatial boundaries related to a specific characteristic or can be linked with other datasets. Examples include census areas, land ownership parcels, historic areas (e.g. conservation areas).	No need for validation, can sometimes require enhancement. Often have legal status. Generally considered accurate and precise.
Areas defined by models or proxies	These are defined areas by modelling. The accuracy varies on methods and base data. Data can include emissions, soil type (which is important for renewable assessments), land use, brownfield land, areas served by specific electricity substations.	Accuracy and precision should be considered.
Live / recent data	Examples include real time data (e.g. Building energy management System [BEMS] data), smart data, sensor data, weather data, satellite data.	Accuracy and precision are generally good; however, this will depend on measuring approach. Permissions need careful consideration.
Historic data	Examples include historic EPC, gas and electricity usage, weather data, Light Detection and Ranging (LiDAR).	Accuracy and precision will vary and can be out of date but can be useful for assessing trends.
Input data for modelling	This could be benchmarks if input is used as a proxy to infer what you need (e.g. emissions for energy).	Accuracy and precision will vary and can be useful as an initial estimate.

Data Type

Data types define the structure and format of information, influencing how it can be processed, interpreted, and integrated. As such, the format of data-provided significantly affects its usability. Well-structured, clean data is far more likely to be successfully integrated at all development stages of a project. The following items are worth considering:

- **Spatial data:** Ideally this will be a standard Geospatial Information system (GIS) format (e.g. shapefile, GeoJSON, or GeoPackage), in a known projection and with common spatial identifiers included.
- **Images:** can be useful to bring context but consideration is needed if they are to be used in modelling as they can be time consuming to integrate into projects and can also lead to inaccuracy.
- **Tabulated:** most data are likely provided in Excel or CSV format. If the data is integrated into a spatial format, **ensure that this tabular data has:**
 - **A spatial identifier** (e.g. Unique Property Reference Number (UPRN)², TOID (topographic ID from OS which will link to a building)
 - x/y coordinates
 - Postcode
 - Lower layer Super Output Area (LSOA) code).
- **Text based/report data:** It is very difficult to extract data from documents in PDF form, particularly large volumes of spatial data. The relevance and importance of this data must be considered before extraction.

Budgeting and time considerations

Determining the available data types, formats and sources within a local authority can be time consuming so special consideration is needed to either pre-prepare this and/or request in the specification that the delivery party provides clearly defined guidelines on their required sources and formats (assuming they will have this knowledge). Alongside the data types there are other important factors to consider, including:

- **Data assumptions:** if the commissioning organisation have predefined data assumptions (e.g. cost, benchmarks, performance metrics, or reference values) or would like these to be created during the process, these should be outlined in the ITT. This should also specify the format the commissioner and practitioner require the data to be presented in to ensure consistency.
- **Pre-processing and data gathering:** Large volumes of data that require processing or high input from the council, must be considered a key risk by practitioners responding to an ITT. Suitable timelines should be agreed by all parties to allow for this.
- **Governance:** a separate guidance note is provided for governance³. Correct agreements must be in place before any data is shared. The local authority may hold data they think can be used but this may have costs associated with passing the data to a third party.

² This refers to child UPRNs in some instances there will be a parent UPRN (for example a block of flats). Child UPRN is the more important data point, due to the ability to aggregate individual properties but not disaggregate them. However, parent UPRNs are also of use and can prove more consistent for modelling than TOIDs which are used widely in many datasets and national models.

³ C_Governance guidance

Qualitative vs Quantitative Data

Whilst data formats have been considered above, it is important to understand the data fields themselves and the attributes they contain. These are outlined in Figure 3.

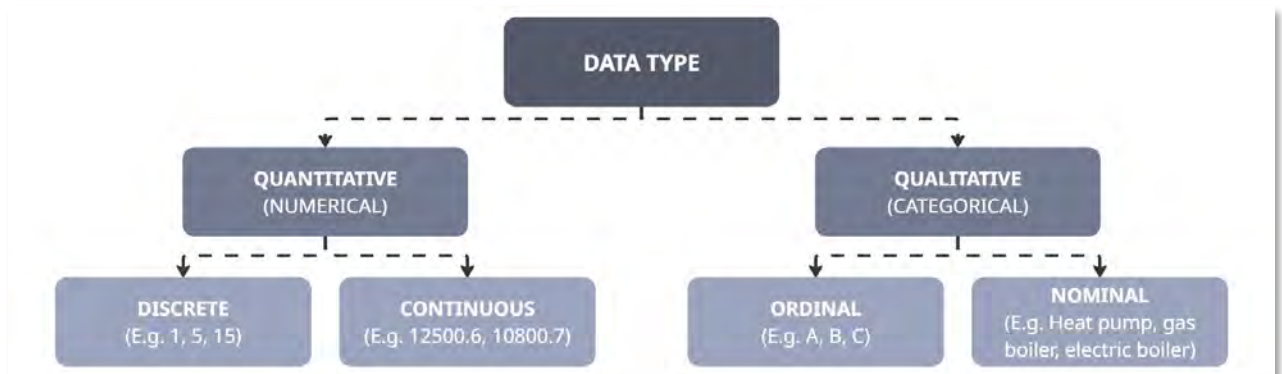


FIGURE 3: DATA ATTRIBUTE TYPES

Quantitative (numerical) data consists of numerical values that support mathematical operations. It can be categorised into the following:

- **Discrete data:** values that represent fixed numbers or counts (e.g. number of occupants – 1, 4, 5)
- **Continuous data:** represented values that can be expressed as fractions and do not need to be presented as whole numbers (e.g. coordinates: 53.4009, -2.9961)

Qualitative (categorical) data describes characteristics or categories and is split into the following:

- **Ordinal data:** categorical data with a meaningful scale (e.g. energy efficiency ratings: A, B, C)
- **Nominal data:** categorical data with no meaningful scale (e.g. types of heating systems: heat pump, gas boiler, electric boiler)

Considering these attribute types in data is important for compatibility and the type of modelling that can be undertaken. Further details and examples of data fields and attributes are provided in the accompanying *NEEDS data tool*.

Case Studies and Examples

EPC data is often the basis for property level information. There are multiple suppliers of EPC derived data, with infilling processes if a property does not have an EPC to create a complete picture. However, this precision is not always accurate, with errors in the infilling process being observed (particularly in non-homogenous building stock such as non-domestic properties or rural areas) as well as inaccuracy in base EPC measured data. Being able to analyse this fine resolution and then aggregate to help mitigate the impact of errors. A study can look to enhance these data, through various crosschecks (e.g. consumption data from network operators or larger aggregated datasets).

Heat Network Zoning data is building level. However, the focus is on heat demand so it can not currently be used to inform retrofit. Data resolution in relation to different fields and parameters is important to consider when understanding what is required of a commission. The accompanying Data Mapping Tool helps to break down the required parameters for different outputs.

Aggregated data is often open access and an important element of modelling in many instances (for example understanding target demographics). It can be a low cost or often free solution to understand an area but if at a later stage individual building data is used it will often give different results. One example of an aggregated data tool using open access data is <https://www.nongasmap.org.uk/>.

Smart meter data is a valuable resource for local authority projects, from energy planning to supporting vulnerable households. Granular datasets, such as household-level readings, offer the most accurate insights and enable robust modelling, but also bring additional requirements around consent, cost, and governance. These obligations vary depending on the access route and should be considered early in project planning. Where such detail is not essential, aggregated data may be preferable, as it often reduces cost and simplifies compliance while still meeting most strategic objectives.

National Energy Environment Data Specification

C. Governance

July 2026

Version 001

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Term	Description
AI	Artificial Intelligence
CNZ	Centre for Net Zero
DCC	Data Communications Company
DESNZ	Department for Energy Security and Net Zero
DPA	Data Protection Act
DPIA	Data Protection Impact Assessments
DT	Digital Twin
EPC	Energy Performance Rating
EV	Electric Vehicle
GDPR	General Data Protection Regulation
HH	Half hourly
IP	Intellectual Property
ITT	Invitation to Tender
LA	Local Authority
LAEP	Local Area Energy Plan
LBSM	London Building Stock Model
LSOA	Lower layer Super Output Area
ML	Machine Learning
MHHS	Market-Wide Half-Hourly Settlement
MPAN	Meter Point Administration Number
NEEDS	National Energy Environment Data Specification
OS	Ordnance Survey
Personal data	Any data that can identify an individual, directly or indirectly
SMEDR	Smart Meter Energy Data Repository

Introduction

Robust data governance is essential for the responsible, secure, and lawful use of data across the energy and environmental project lifecycle. It must be embedded from the outset and remain adaptable to evolving legal, technical, and regulatory requirements.

This guidance supports local authorities in applying governance best practice throughout the National Energy Environment Data Specification (NEEDS) – a national framework and toolkit that standardises how energy and environment data is specified, managed and shared to support local decarbonisation planning. It covers the following key stages: data inputs, modelling, outputs, and dissemination. It explains common data types (personal, commercial, licensed) and highlights key considerations including access, consent, ownership, output formats, and secure sharing.

Governance, in the context of energy and environmental planning, refers to the frameworks, policies, and practices that ensure the responsible, effective, and ethical use of data throughout the planning lifecycle. It encompasses how data is acquired, managed, shared, and applied to support decision-making, collaboration, and public accountability.

Robust data governance is an essential component of any project involving data analysis to ensure compliance with the relevant legislation and regulation and, in doing so, to maintain public trust. This includes managing requirements arising from personal data protection (e.g. GDPR), data licensing conditions, funding obligations, and audit and accounting requirements, all of which may place specific constraints on how data is accessed, used, shared and retained.

The sections that follow first outline general data governance principles that should be considered as part of data governance best practice, then walks through governance considerations for each stage of the NEEDS toolkit, namely:

- 1. Data inputs**
- 2. Modelling requirements**
- 3. Data outputs**
- 4. Reporting and dissemination**

At each stage, real world examples are highlighted using Energy Performance Certificate (EPC), Ordnance Survey (OS) and smart meter data. These have been selected due to their prevalence as a data input across a wide range of NEEDS applications. While smart meter data offers a useful example because of its high value, yet relatively complex data access and usage framework owing to its sensitive nature.

General data governance principles

A review of Government and Local Authority (LA) data governance guidance (see Appendix A) highlights ten common, overarching best practice principles for LAs to consider when using and sharing data. These should be considered alongside the NEEDS 'commissioning decisions' guidance, which helps determine existing levels of data governance readiness and maturity:

1. **Data governance framework:** establish a comprehensive data governance framework that includes policies, procedures, and guidelines for data management (underpinning all subsequent principles). Regularly review and update to adapt to changing needs and regulations.
2. **Transparency and accountability:** ensure that data collection, storage, and usage processes are transparent. Clearly define roles and responsibilities for data management and establish accountability mechanisms.
3. **Data quality and integrity:** maintain high standards of data quality by ensuring accuracy, completeness, and reliability of data. Implement regular data validation and cleansing processes.
4. **Data security and privacy:** protect data assets from unauthorised access, breaches, and other security threats. Comply with data protection regulations such as General Data Protection Regulation (GDPR) and ensure that personal data is handled with the utmost care.
5. **Interoperability and standardisation:** use common data standards and formats to ensure interoperability between different systems and datasets. This facilitates data sharing and integration across departments and organisations.
6. **Data accessibility and usability:** make data easily accessible to authorised users while ensuring that it is presented in a user-friendly manner. Provide adequate training and support to staff to enhance data literacy.
7. **Ethical use of data:** ensure that data is used ethically and responsibly. Avoid any practices that could harm individuals or communities and ensure that data usage aligns with public interest.
8. **Stakeholder engagement:** engage with stakeholders, including citizens, businesses, and other public sector organisations, to understand their data needs and ensure that data governance practices meet their expectations.
9. **Data lifecycle management:** Implement effective data lifecycle management practices, including data creation, storage, usage, archiving, and disposal. Ensure that data is retained only for as long as necessary and disposed of securely.
10. **Continuous improvement:** Foster a culture of continuous improvement in data governance practices. Regularly assess and enhance data management processes to ensure they remain effective and efficient.

These principles are designed to help local authorities manage their data assets effectively, ensuring that data is used in a way that is secure, ethical, and beneficial to the public.

NEEDS data classification

Open Energy has created a data classification system which categorises data into one of five classes based on its level of personal, commercial and security sensitivity. Here, personal sensitivity relates to privacy and consumer protection associated with ‘personal data’, as defined by the UK Data Protection Act (DPA) 2018. Personal data can be highly useful across a large number of projects that fall within the NEEDS framework. This ranges from actual consumption data at a property level from smart meter information to health data. This more detailed information allows far greater insight and as result more targeted and accurate outputs and actions. Whilst it is unlikely projects will report this information at individual household level it still requires handling and storage of GDPR sensitive data.

Commercial sensitivity considers intellectual property and commerciality, while security sensitivity relates to cybersecurity and critical national infrastructure (Icebreaker One) ¹. This provides a useful framework to categorise all NEEDS’ datasets. When selecting and integrating any dataset into a NEEDS project, applying this framework helps the user balance the value of any dataset against the friction associated with accessing and using it.

¹ [Icebreaker One Sensitivity Classes](#)

Table 1 sets out these primary data classification categories, providing examples of smart metering data and other commonly used NEEDS datasets. All datasets within NEEDS will fall into one of these categories, generating several upfront questions for the organisation to consider at the data input stage of a project (refer to NEEDS decision tree tool).

In some instances different kinds of data presented in Table 1 will be combined within projects. This presents risks about ensuring suitable levels of governance are considered. This is explored further in a later section (Step 4. Modelling requirements).

TABLE 1 NEEDS DATA SENSITIVITY CATEGORISATION, ADAPTED FROM IB1'S DATA SENSITIVITY CLASSES TABLE (DATA SENSITIVITY CLASSES – ICEBREAKER ONE)

Data category		Description	Smart meter data example	Other examples	Sensitivity level (indicative) ²
Open		Full open access, under an open data licence. Free to use, by anyone, for any purpose.	No of smart meters rolled out, aggregated smart meter half hourly (HH) consumption data (by DNO region)	Lower layer Super Output Area (LSOA) ID, Digest of UK Energy Statistics, Ordnance survey (OS) Open data, London Building Stock Model version 2 (LBSM2), , Open EPC data	Personal - L Commercial - L Security - L
Shared	Personal	Datasets which include personal data , requiring appropriate consent to share, or other legal bases to data processing, as defined by the EU GDPR.	Smart meter consumption data (household, HH)	Some temperature preferences, protected characteristics or special category data (e.g. dependence on power due to health conditions), individual Electric Vehicle (EV) charging records, detailed EPC data	Personal - H Commercial - M Security - H
Shared	Via contract	Datasets which do not include personal data and which can/could be shared, but currently require bilateral contract negotiation . May include aggregated data about individuals, subject to best practice adherence (e.g. Information Commissioner's Office anonymisation code.)	Smart meter system data, daily smart meter installations	Public EV charge-point performance, generation asset performance, aggregated microgeneration export profiles, 'Investment grade' data (e.g. suitable granularity for financial decision-making), sensitive asset data. Includes many third party procured datasets (Eg EPC derived. Cotality [previously Parity projects] operates a SaaS [Software-as-a-Service] model for its retrofit analytics platforms [Portfolio, Pathways]).	Personal - M Commercial - M Security - M
Shared	Restrictions	Datasets which can/could be shared, but which require the user to agree to 'light touch' T&Cs to access and use (e.g. non-commercial clauses such as those under CC-BY-NC).		OS National Geographic Database, Network capacity, outage data, weather predictions, European space agency data, geolocation information for non-sensitive assets (e.g. Renewable Assets, EPC certificates).	Personal - L Commercial - M Security - L
Closed		Limited to internal organisational access only or limited, bespoke bilateral contracts under specific circumstances. May be subject to hard legal barriers to sharing. May be security-critical information		Business-critical proprietary information or Intellectual Property (IP), critical asset locations, classified information.	Personal - H Commercial - H Security - H

² L – Low, M – Medium, H – High

Governance considerations across steps 3 to 6

In each of the sections below, best practice governance considerations are mapped against each stage of the NEEDS toolkit, with real world case examples highlighted in each.

Step 3: Data inputs

Summary points to consider:

- Technical ease of accessing data (including timescale for getting access)
- Regulatory or legal barriers to accessing the data (e.g. consent requirements to access the data)
- Cost of data access / use
- Potential restrictions on use / risk of proprietary lock-in
- Constraints on data sharing, reuse and onward dissemination of outputs
- Data types and granularity

Selecting appropriate data inputs is a critical first step in any NEEDS project. Commissioners must consider not only the relevance of each dataset but also the practical, legal, and financial implications of accessing and using it. Importantly, input selection should also be informed by intended use cases and how outputs will be shared, reused, or integrated into future work, as this may affect whether open or restricted datasets are appropriate.

Accessing data can be straightforward or complex depending on where it comes from (some examples are provided in Appendix B). Some datasets such as synthetic or aggregated data are easy to access through open platforms, while others, such as household-level smart meter data, often involve more time-consuming steps like securing consent and integrating with secure systems. It is therefore important for LAs to plan and make sure data access timelines fit with their project schedules.

Regulatory and legal barriers must also be assessed particularly in relation to processing personal data. Personal data may require explicit consent, and its use is governed by frameworks such as the Information Commissioners Office (ICO) guidance³, UK GDPR and sector specific guidance such as the Data Access Privacy Framework (DAPF)⁴ in relation to smart metering (Appendix C-E provide context on these issues around smart meter data and GDPR more generally)

A proportionate legal assessment should be conducted for each dataset to confirm the lawful basis for processing and whether a Data Protection Impact Assessment (DPIA) is required. Depending upon the scenario this may involve structured checks—such as confirming data ownership, licensing terms, consent requirements, and alignment with relevant guidance (e.g. UK GDPR and ICO guidance). Links with further detail on legal and regulatory requirements can be found at the ‘Further Reading’ section of this guidance (Appendix A). Relevant legal, licensing and governance considerations may also be documented within the project’s data catalogue to ensure transparency, consistency, and ease of reuse across future applications.

Cost of access is an equally important factor to be considered and incorporated into project budgets and procurement planning. Open data is generally free but may lack detail whilst commercial or proprietary datasets can involve licensing fees and usage restrictions.

³ [Information Commissioners Office \(ICO\) guidance](#)

⁴ [Data Access Privacy Framework \(DAPF\)](#)

This may also lead to lock-in to a particular dataset if commercial terms and conditions do not allow sufficient flexibility to process, re-use, or onward share specific datasets. Similarly, specific data sets such as smart meter data may incur onboarding and operational costs. Further detail regarding onboarding with the Data Communications Company (DCC) can be found [here](#)⁵.

When considering data granularity, whether in terms of location detail or time intervals, it is important to find the right balance. More detailed data can improve modelling accuracy, but it also brings greater privacy risks and more complex governance requirements. Commissioners should aim to use only as much detail as needed for each use case, and wherever possible, use aggregated or anonymised data to keep things simple and compliant.

It's essential that all of these considerations are understood and weighed up at the onset of a project. No matter what the data set is – be it personal data, system-level metadata, synthetic datasets, or third-party sources like EPC ratings or vulnerability indicators - each comes with its own rules and responsibilities, depending on how sensitive it is and what the intended use is.

Case example: Smart meter data

The smart metering network transmits around **3 billion messages monthly**, with smart meter **consumption** and **system data** offering high value for local authorities' Net Zero planning and monitoring activities. Several data access routes exist, with the preferred route dependent on the scale, granularity and frequency of data required, as well as the LAs available resources. Today, accessing household level data requires **consumer consent** and compliance with the **Smart Energy Code (SEC)** and **Data Access and Privacy Framework (DAPF)**. Where suitable, **aggregated, anonymised, or pseudonymised data** may be used without individual consent and should be explored where household level data is not essential. Data access could be managed on an open or shared basis, subject to its characteristics, sensitivity classification and applicable governance controls. Several industry reviews are currently considering how aggregated datasets could be shared; relevant material is signposted in the Further Reading section below.

Case example: Ordnance Survey (OS) data

Ordnance Survey (OS) data is a valuable asset for local authorities, offering high-quality geospatial information to support effective planning and service delivery. Through the **Public Sector Geospatial Agreement (PSGA)**, authorities can access both OS OpenData and Premium datasets via the **OS Data Hub**, without incurring additional licensing costs. Data can be shared with other PSGA members and contracted third parties, provided the use directly supports public service functions. However, onward sharing for unrelated or commercial purposes is not permitted. To ensure compliance, local authorities must follow OS licensing terms, establish **Data Sharing Agreements (DSAs)** with third parties, maintain clear audit trails, and adhere to **UK GDPR** where personal data is involved.

⁵ [Partnering with the DCC](#)

Case example: Energy Performance Certificate (EPC) data

Energy Performance Certificate (EPC) data is publicly available in anonymised form for research purposes, but detailed records are restricted under UK GDPR and the **Energy Performance of Buildings Regulations**. Full certificate details, including property address, can only be accessed by the property's **owner, landlord, or occupier**, an **accredited energy assessor**, or a **third party with explicit consent**. Local authorities must ensure compliance with these regulations when requesting or sharing EPC data.

Step 4: Modelling requirements

Summary points to consider:

- Consent and data protection requirements associated with processing and sharing data (for what purposes is the data being used and how must it be stored)
- Project delivery partner (e.g. Local Area Energy Plan [LAEP] practitioner) adherence to data governance best practice (are the necessary systems and processes in place)
- Maintaining compliance when combining datasets

Modelling is the critical bridge between data inputs and outputs in LAEPs and other environmental data planning. It is where data is processed, interpreted, and transformed into actionable insights. However, this stage also presents heightened risks and responsibilities, particularly when personal data is involved. Organisations must ensure that both their internal teams and any commissioned practitioners adhere to robust data governance standards throughout the modelling process.

Key consideration for organisations

There is a risk that workshops or other stakeholder engagement activities could inadvertently lead to the disclosure of personal data (e.g. household-level energy use, vulnerability indicators). To prevent this kind of data breach it is recommended to avoid displaying raw personal data in public forums and use aggregated or anonymised data wherever possible. All materials used or produced (e.g. slide decks, reports, images) should clearly state data sources, attribution requirements, and any restrictions on sharing or reuse to ensure compliance with licensing, legal, and governance obligations.

Organisations must also ensure that any practitioner or delivery partner has the necessary readiness measures in place, including secure systems for data storage and processing, documented procedures for handling personal data, and staff trained in data protection and ethical use. The following is a best practice checklist for data procurement:

- Compliance with UK GDPR and Data Protection Act 2018⁶
- Alignment with ISO/IEC 27001 (Information Security Management)⁷
- Use of DPIAs
- Secure data transfer protocols (e.g. encrypted channels) Clear data retention and deletion policies.

A further risk to be aware of comes from combining different data sets as these can transform non-personal data into personal data, especially when identifiers (e.g. postcode, MPAN) are added. For example, energy consumption data may be non-personal in isolation, but when linked with housing stock or vulnerability data, it may become identifiable. To mitigate this risk, it is advised that organisations conduct DPIAs (whether as a best practice or mandatory activity under GDPR) when merging datasets, avoid unnecessary linkage of identifiers and use pseudonymisation techniques where linkage is essential.

Data storage, as well as how it is imported and exported should also be carefully considered. When storing data organisations must use secure, access-controlled environments and any cloud-based solution must comply with UK data residency and security standards. For importing or exporting the data formats should be interoperable with the metadata preserved.

⁶ <https://www.gov.uk/data-protection>

⁷ <https://www.iso.org/standard/27001>

Case example: Smart meter data

Combining datasets during modelling is common practice, but it introduces **identifiability risks** under **UK GDPR**. For example, when modelling to identify households at risk of fuel poverty, integrating smart meter, property, and vulnerability datasets can turn previously non-personal data into personal data. Smart meter data aggregated at substation level may be considered “open,” but when linked to address-level EPC and council records, individuals or households can be identified or inferred. Even if each dataset appears anonymised on its own, combining them can lead to **re-identification**.

Step 5: Data outputs

Summary points to consider:

- Project output requirements (what must the project outputs be able to show)
- Clarifying ownership and use
- What format (e.g. granularity) do stakeholders need the data outputs, and what if any governance needs considering as part of this?

Once data has been processed and modelled, the resulting outputs must be carefully managed to ensure they are usable, appropriately formatted, and governed in line with legal and ethical standards. To provide an illustrative example, this stage focuses on how data is used within the project to produce a LAEP, distinct from how it may be shared or maintained after the project concludes (covered in Step 6).

Data outputs should be structured in a way that supports clear interpretation, decision-making, and integration into the LAEP or any other environmental plan. This includes ensuring outputs are aligned with the original project objectives, data is presented in formats that are accessible to both technical and non-technical stakeholders, and metadata is comprehensive, standardised and clearly linked to project outputs.

Best practice would include the development of supporting artefacts such as a data catalogue (listing datasets, sources, licensing conditions and update cycles) and data dictionaries (defining fields, units, assumptions and methodologies), with clear referencing between these and the project outputs.

For example, a data catalogue entry might specify a building stock dataset, its source, spatial resolution, licensing constraints and refresh frequency, while the corresponding data dictionary would define each attribute (e.g. EPC rating, heat demand estimate), calculation methods and any assumptions applied.

It is also important to clarify ownership and use as during the project, data outputs are typically managed by the delivery partner or practitioner. However, once the LAEP or environmental plan is complete, ownership of the outputs—including any derived datasets—transfers to the organisation. The commissioner should therefore plan for how outputs will be stored and maintained post-project, what rights and responsibilities they hold over future use and sharing, and whether any licensing or consent conditions apply to continued use (see stage 6).

The format and level of detail in data outputs should be tailored to the different stakeholder. For example, strategic stakeholders may require high-level summaries and visualisations, delivery partners may need more granular data to support implementation planning, and community engagement may benefit from simplified anonymised insights.

Case example:

At the outset of an LAEP project, organisations should ensure the commissioning process considers the full range of stakeholders—including internal teams, delivery partners, data providers, and community representatives. Early engagement is essential to **define expected outputs, formats, and related data governance considerations covering licensing, consent, privacy, and compliance with UK GDPR. Clear definition at the commissioning stage** (and reflected in the Invitation to Tender [ITT] where feasible) helps ensure legal compliance, transparency, and effective project delivery.

Step 6. Reporting and dissemination

Summary points:

- Sharing project outputs (which project outputs be shared, to whom, and on what basis)
- Onward sharing wider project data (e.g. other valuable contextual datasets)
- Consider alternative analysis/dissemination approaches to minimise data governance risks (e.g. digital twins [DTs])
- Ensuring safe, secure and compliant storage, processing and dissemination of data post project (including if risk profile has changed depending on data processing / integration with other data sets).
- Applying anonymisation and pseudonymisation techniques when appropriate.

Once the LAEP or environmental plan is developed, organisations must consider what happens next with the data - whether it's raw figures, insights, or visualisations. That includes how data is stored, shared, and maintained, not just within the project team but also with commissioning bodies, delivery partners, and other stakeholders. Getting the governance right at this stage is key to making sure the data stays useful, secure, and compliant in the long run.

As stated previously, the level of granularity that can be shared depends upon whether data is personal (e.g. household-level energy use) or non-personal (e.g. aggregated or anonymised statistics). It is important to note that the purpose for sharing is also relevant as sharing for public engagement, policy development, or commercial innovation may require different levels of data sensitivity.

Consideration must also be given to ongoing data storage and security post project with data stored in secure environments with access controls and encryption. It is recommended that LAs conduct a post-project DPIA to reassess risks and mitigation strategies, including considering whether the risk profile has changed due to integration with other data sets, increased granularity, or expanded access or sharing.

When considering how to disseminate data, options such as digital twins and heatmaps can visualise insights without exposing raw data. Other techniques that remove the risk of revealing individual identities include anonymisation and pseudonymisation enabling broader data sharing, reducing legal and ethical risks, and supporting compliance with data minimisation and purpose limitation principles. Further information on these can be found at the following:

- **National Digital Twin Programme⁸**
- **ICO Guidance on Anonymisation and Pseudonymisation⁹**

Organisations should also have a firm plan for maintaining data governance beyond the project such as establishing a data stewardship model to manage ongoing access, licencing, updates, and compliance. This should also include defining retention periods to ensure secure deletion of personal data when no longer needed.

⁸ [National Digital Twin Programme Guidance Collection – GOV.UK](#)

⁹ [ICO Anonymisation and Pseudonymisation Guidance](#)

This stage of a project is when data is likely going to be handed over with greater onus on the public sector body rather than a contractor completing the work (who should have suitable procedures in place). Ensuring the 10 governance principles detailed are satisfied is a useful final cross check. Additionally the final three principles:

- Stakeholder engagement
- Data lifecycle management
- Continuous improvement

Are all likely key elements of the reporting and dissemination stage of a NEEDS project.

Case example: Smart meter data

When considering how smart meter data can be shared and repurposed to unlock further value, it is important to consider licensing and consent alignment by reviewing Smart Energy Code (SEC) guidance and any Data Access and Privacy Framework (DAPF) conditions that govern onward use. This includes ensuring that any consent agreements match the intended use and audience of the shared data. For example, if data was collected for modelling purposes only, it cannot be repurposed for commercial use without updated consent. Organisations must carefully assess any new use of data beyond its original purpose, ensuring it **is lawful, clearly justified, and properly documented**, in line with UK GDPR and relevant data governance standards.

The Future

A range of policy, regulatory, and technological drivers continue to reshape energy and environmental data use, with direct implications for the NEEDS framework and its governance. To remain effective, the framework and organisations use of it must remain flexible, with internal data policies under regular review. Key areas of development to monitor include:

- **Data access:** Efforts to simplify access to valuable data, including via Ofgem's Market-Wide Half-Hourly Settlement (MHHS) and Energy Data Best Practice (EDBP) programmes, and Department for Energy Security and Net Zero's (DESNZ's) Smart Meter Energy Data Repository (SMEDR) innovation programme
- **Data standardisation and licensing:** Work to improve interoperability and streamline licensing, including NESO's Data Sharing Infrastructure programme which seeks to establish a standardised approach for energy system data exchange
- **Data privacy and security:** Balancing open data access with consumer protection will remain critical, especially as new legislation (e.g. the Data Protection and Digital Information Bill) and a tool for centralised consumer consent emerges
- **Artificial Intelligence (AI) and Machine Learning (ML):** AI and ML will further amplify the challenges and opportunities introduced in this guidance. The normalisation of predictive analytics, automated decision-making, and advanced data integration will present new risks, and require new governance arrangements to maintain trust, transparency and fairness in the use of data.

Appendices

Appendix A - Further reading

TABLE A1 FURTHER READING

Category	Subcategory	Links
i) Public sector data governance frameworks		- Data Sharing Governance Framework - GOV.UK - Data Principles - Office for National Statistics - A guide to the data protection principles ICO - Data governance Local Government Association - Data protection impact assessments ICO - The PSGA Government and public sector OS
ii) Industry initiatives	Data access	- Digitalisation actions needed for Clean Power 2030 : Energy Sector Digitalisation Plan (NESO) - Market-wide Half-Hourly Settlement (MHHS) reform - Automatic Asset Registration Programme (AAR)
	Data standardisation & exchange	- Digital spine feasibility study: exploring a data sharing infrastructure for the energy system - Energy Data Best Practice Guide expansion
	Data privacy & security	- Centralised Consumer Consent solution
iii) Best practice guidance		- Ofgem Energy Data Best Practice - LAEP DataHub - ICO Data Protection Impact Assessments (DPIA)
iv) Key legislation and regulatory developments		- General Data Protection Regulation (GDPR) - UK Data Protection Act (DPA)
v) Smart meter data		- Smart Meter Data Access and Privacy Framework (DAPE) - The Smart Energy Code (SEC) - Smart Meter Energy Data Repository (SMEDR)

Appendix B – Example of key NEEDS data (smart meter, OS, EPC) access routes, legislation and regulation

TABLE B1 - CURRENT SMART METER DATA ACCESS ROUTES

Data type / source	Description	Data categories available	Spatial aggregation	Temporal aggregation	Access requirements
Smart meter data – direct via DCC ‘Other User’ role	Direct Access via DCC’s ‘Other User’ role	25 SRVs/Half-hourly consumption for electricity and gas. Export profile Tariff profiles Load control data	Household/ SME with explicit consent only	Up to 13 months half hourly data held on the meter Export profile (up to 3 months historical data) Sub 10 second power data available via pairing a CAD device	On-boarding to DCC and accession to the SEC. Requires completion of several steps including, administrative, security and data privacy assessments as well as technical integration to the system. The DCC is currently taking all steps (within the current licence and regulatory framework) to shorten this process, to ensure access via the DCC is as frictionless as possible
Smart meter data via the ‘Other User’ secondary market, or OU enabled tertiary market		25 SRVs/Half-hourly consumption for electricity and gas. Export profile Tariff profiles Load control data	Household/ SME with explicit consent only	Unknown – subject to OU data storage	Bilateral agreements with the Other User, or an entity who have contracted with the Other user, who charge for smart meter access on a £/meter model. May provide access to processed SM data (e.g. aggregated) to bypass consumer consent considerations.
Smart meter data – aggregated via Distribution Network Operators (DNOs)		Half-hourly consumption only Voltage data Alerts Network data	Aggregated to a minimum of 5 premises		Open data – portal registration only. Since Feb 2024, all distribution networks have been mandated by Ofgem to provide access to half-hourly consumption data in anonymised (aggregated) form. Each DNO has produced a privacy plan, approved by Ofgem, which articulates how data is anonymised.
Smart meter ‘system’ data via DCC	System data sits outside the ‘message envelope’. Can provide insights related to fuel poverty, smart meter penetration, low carbon technology adoption and robustness of the network	Smart meter system data includes vending, meter tamper alerts, pre-pay top up and credit exhaustion	Household/ SME with explicit consent only		Bi-lateral agreement with DCC. DCC must receive permission from Ofgem via a Permitted Purpose to carry out data sharing with approved organisations by Ofgem and the energy suppliers for a specific purpose (currently being done for fuel poverty initiatives). As energy suppliers are the data controllers, DCC must receive a Data Processing Agreement (DPA) from the energy suppliers to share this data. The organisations receiving the data must sign a Data Access Agreement (DAA) with DCC before receiving the data.
Synthetic smart meter data via Centre for Net Zero (CNZ)	Synthetic smart meter data provided by Centre for Net Zero.	Synthetic Half-hourly consumption data for electricity and gas	Household level with user-defined conditioning on various attributes		Open data – OpenSynth portal registration. The CNZ also provide a generative AI model trained on over 1.8 billion smart meter readings with access free to researchers, policymakers and DNOs.

Ordnance survey (OS)	High-quality geospatial data about Great Britain's geography, addresses, and infrastructure. Provides LA insight across planning, infrastructure, and service delivery, especially when combined with address and street-level data.	OS Open Data OS Premium	British National Grid Aggregation Build-Up Areas (BUAs) Administrative and Statistical Boundaries		Under the Public Sector Geospatial Agreement (PSGA), authorities can access OS Open Data and Premium datasets via the OS Data Hub without additional licensing costs. Data sharing is permitted with PSGA members and contracted third parties where use directly supports public service functions; onward sharing for unrelated or commercial purposes is prohibited. In addition, the publication of "derived data" is permitted under specific conditions set out by Ordnance Survey, enabling certain outputs (e.g. aggregated or transformed datasets that do not expose licensed source data) to be shared more widely, subject to compliance with those guidelines. Authorities should refer to OS guidance on derived data to ensure that any such outputs meet the criteria for lawful publication.
Energy Performance Certificate (EPC)	An Energy Performance Certificate (EPC) provides a standardised assessment of a building's energy efficiency. EPCs can be used to target retrofit programmes, support fuel poverty initiatives, inform planning and policy for net zero strategies and coordinate funding applications with evidence-based targeting.	Property details Energy Efficiency Ratings Building Fabric and Services	Household level		Energy Performance Certificate (EPC) data is publicly available in anonymised form for research purposes, but detailed records are restricted under UK GDPR and the Energy Performance of Buildings Regulations. Full certificate details, including property address, can only be accessed by the property's owner, landlord, or occupier, an accredited energy assessor, or a third party with explicit consent. Local authorities must ensure compliance with these regulations when requesting or sharing EPC data.

Appendix C - Summary of key legislation impacting the access and use of smart metering data:

TABLE C1 KEY LEGISLATION IMPACTING THE ACCESS AND USE OF SMART METERING DATA

Legislation	Description
UK GDPR and Data Protection Act 2018	Smart meter data is considered personal data if it can identify an individual, even indirectly. Consent is required for access to half-hourly data unless anonymised or aggregated.
Data Access and Privacy Framework (DAPF)	Developed to complement GDPR, the DAPF governs access to smart meter data by suppliers, network operators, and third parties. It defines mandatory, opt-out, and opt-in access levels.
Smart Energy Code (SEC)	A multi-party agreement that governs technical and commercial arrangements for smart meter data access and device pairing.
Smart Meters Act 2018	Provides the legal basis for the smart meter rollout and the operation of the Data and Communications Company (DCC), which manages secure data transmission.
Data Use and Access Act 2025	Introduces Smart Data Schemes and a new lawful basis for processing personal data.

TABLE C2 AN ILLUSTRATIVE EXAMPLE OF HOW REGULATIONS AND DATA LEGISLATION IMPACT DATA ACCESS AND USAGE ACROSS A RANGE OF SMART METER DATA CATEGORIES.

Data type	DPAF	UK GDPR	SEC
Energy consumption data – half hourly household level energy consumption data	Applies	Applies	Applies
Other personal (non-consumption) energy data (e.g. MPAN, some system data)	Does not apply	Applies	Applies
Non-personal energy data (e.g. voltage, export, some system data)	Does not apply	Does not apply	Applies

Appendix D – GDPR

General Data Protection Regulation ([GDPR](#)) - implemented through the UK Data Protection Act ([DPA](#)). Personal Data is defined as any data that can identify an individual, directly or indirectly (e.g. energy usage at household level).

TABLE D1 KEY GDPR PRINCIPLES

Principle	Description
Lawfulness, fairness, and transparency	Organisations must process personal data in accordance with the relevant legislation and regulation.
Purpose limitation	Data should only be collected and used for clearly defined, legitimate purposes.
Data minimisation	Only the minimum necessary data should be collected and processed. Aggregated or anonymised data should be used where possible to reduce privacy risks.
Accuracy	Organisations must ensure that personal data is accurate and up-to-date, especially when used for planning or policy decisions.
Storage limitation	Personal data should not be kept longer than necessary. Organisations must define retention periods and ensure secure deletion.
Integrity and confidentiality	Data must be protected against unauthorised access, loss, or damage. This includes encryption, access controls, and secure data sharing protocols.
Accountability	Organisations must be able to demonstrate compliance with all data protection principles, including maintaining records of processing activities and conducting DPIAs.

Under the UK GDPR, there are **six lawful bases** for accessing and processing personal data. Local authorities and their practitioners must identify and document which basis applies before using any personal data in environmental planning

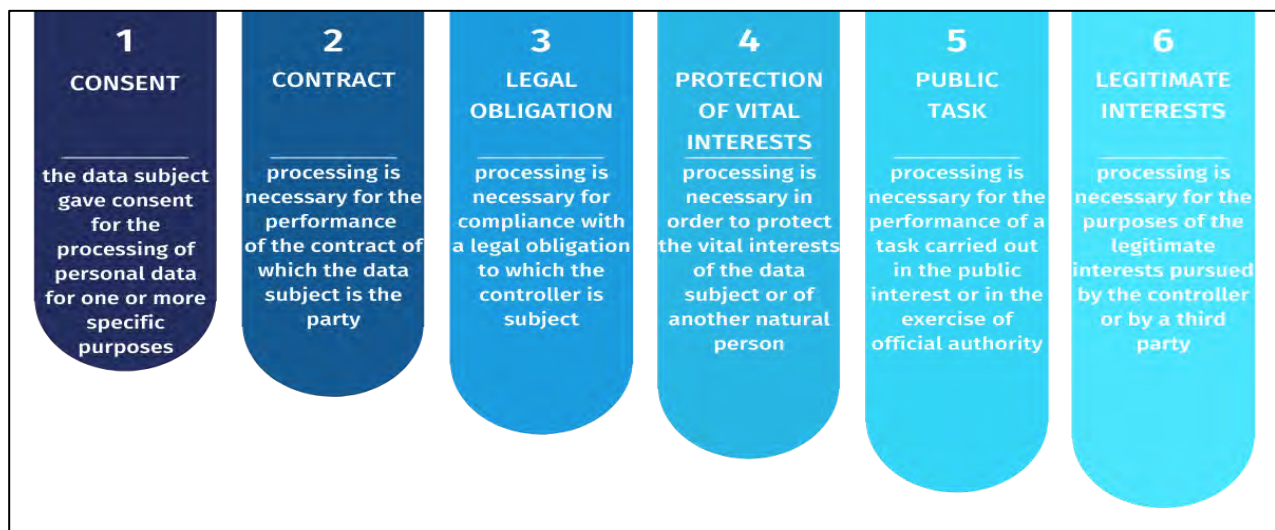


FIGURE D1 GENERAL DATA PROTECTION REGULATION (GDPR) SETS OUT SIX LEGAL BASES OF DATA ACCESS

Appendix E – Smart meter data access and privacy framework

The [DAPF](#) is a regulatory framework designed to govern access to smart meter energy consumption data in a way that protects consumer privacy while enabling legitimate use by authorised parties.

Purpose

- To complement UK GDPR and the Data Protection Act 2018.
- To ensure consumers retain control over who can access their energy consumption data, how often, and for what purposes.

TABLE E1 ACCESS LEVELS DEFINED BY DAPF

Access Level	Name	Description
1	Mandatory access	- Granted to energy suppliers and network operators for regulated purposes (e.g. billing, network management). - Does not require consumer consent.
2	Opt-Out Access	- Consumers are informed and given the option to opt out. - Typically applies to daily consumption data for certain operational uses.
3	Opt-In Access	- Requires explicit consumer consent, especially for more granular data (e.g. half-hourly readings). - Applies to third-party access and non-regulated use cases.

Key Restrictions

- **Legitimate Interest** is **not** a valid lawful basis under DAPF for accessing smart meter data.
- Consent must be **specific, informed, and freely given**.
- Data must be **aggregated and anonymised** for use without consent (e.g. by DNOs under Ofgem-approved privacy plans).

Implications for Local Authorities

- Household-level smart meter data can only be accessed with explicit consent, whether directly or via a trusted intermediary.
- Aggregated or synthetic data should be used where possible to reduce compliance burdens.
- Any use of smart meter data must align with both DAPF and UK GDPR requirements.

National Energy & Environment Data Specification

D. Engagement

July 2026

Version 001

This report has sponsored by the **Local Net Zero Hubs** and has been published by the **North West Net Zero Hub** supported with funding from the **Department of Energy Security and Net Zero**.

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Term	Description
DNO	Distribution Network Operator
ITT	Invitation to Tender
NEEDS	National Energy Environment Data Specification
UPRN	Unique Property Reference Number

Stakeholder Engagement

Unless a purely desk-based plan is commissioned, stakeholder engagement is often considered a key and critical element of any planning development. Consideration should be given to the following items:

- The need to bring local stakeholders on the journey for buy in to the planning process
- Credible sources of local knowledge, data, and pipeline information
- Prospective investors for pipeline
- Internal stakeholders to consult on the benefits of the plan to the local authority.

Often in practice the expectation on stakeholder engagement, how it is to be implemented and which party owns the process is lacking in commissions. This leads to ambiguity and can then lead to issues of quality, delays, and cost. It is therefore important to be clear on these requirements from the outset. In support of this an engagement plan is recommended.

Forming a Stakeholder Engagement Strategy

The following aspects of stakeholder engagement are linked back to the NEEDS process steps¹:

1. **Objective:** frame the study to bring in priorities from stakeholders, supporting buy-in from the outset
2. **Modelling requirements:** integrate relevant stakeholders local knowledge to the analysis, improving relevance and credibility
3. **Data outputs:** define outputs, type, and format of insights that stakeholders should act on
4. **Reporting and dissemination:** be clear on how findings are to be communicated and used, ensuring the study drives informed decision and continued engagement.

Considering the Type of Engagement, Data Required and Setting Expectations

Engagement is important to shaping a meaningful and relevant study but can come with **significant cost implications**. Consideration should be given to the method, timing and volume of activities including:

- **Number of and duration of workshops** (and how these will be facilitated)
- **Calls to stakeholders** – how many, ad hoc, focussed, milestone linked, format
- **Management of expectations** – dedicated sessions for communicating to stakeholders during or post process to manage their expectations and secure buy in
- **Data collection** – obtaining data and information to bring into the planning process and improve accuracy
- **Integration and play-back of results** - disseminating outputs during the process and afterwards with a consideration on format and method.

How much ownership of this process is the responsibility under the local authority and how much is expected from the delivery party should be made clear with a specific reference to the budgetary allocation where possible. When framing engagement and expectations within an ITT it is important to consider **format and frequency of engagement**.

¹ NEEDS specification setup

Items to consider include:

- Where one-to-one meetings are preferred, it is important determine when these should occur, including with internal departments and the timing of these so as not to inhibit the planning process
- In person tends to be most suitable with target stakeholders and at key strategic points. This can include at the end of a project, a major midpoint data and results review
- Surveys are rarely included in ITTs; however, these can be powerful tools depending on the nature of the project. They can be used to target a broader group and obtain information with minimal engagement
- Workshops can be very effective to work with groups but must be well managed and carefully planned with diaries. Online tools e.g. electronic white boards can now help ensure these can be virtual if needed, otherwise travelling costs and other factors should be considered.

In terms of frequency of engagement, it is important to consider:

- Engagement fatigue for active contribution such as a survey or other data gathering generally means only one round of engagement is suitable for most stakeholders
- Any other events that should be linked to stakeholder engagement (e.g. a local climate week, alignment with the Local Plan team, use of community venues)
- If stakeholders are being engaged, it is important to consider the influence stakeholders are expecting to have compared to the impact they will have. An example which is frequently communicated from LAEPs is that community groups do not feel properly considered in the process.

Figure 1 summarises how the cost can vary depending on level of engagement needed, considering both depth and breadth of engagement as well as project maturity.

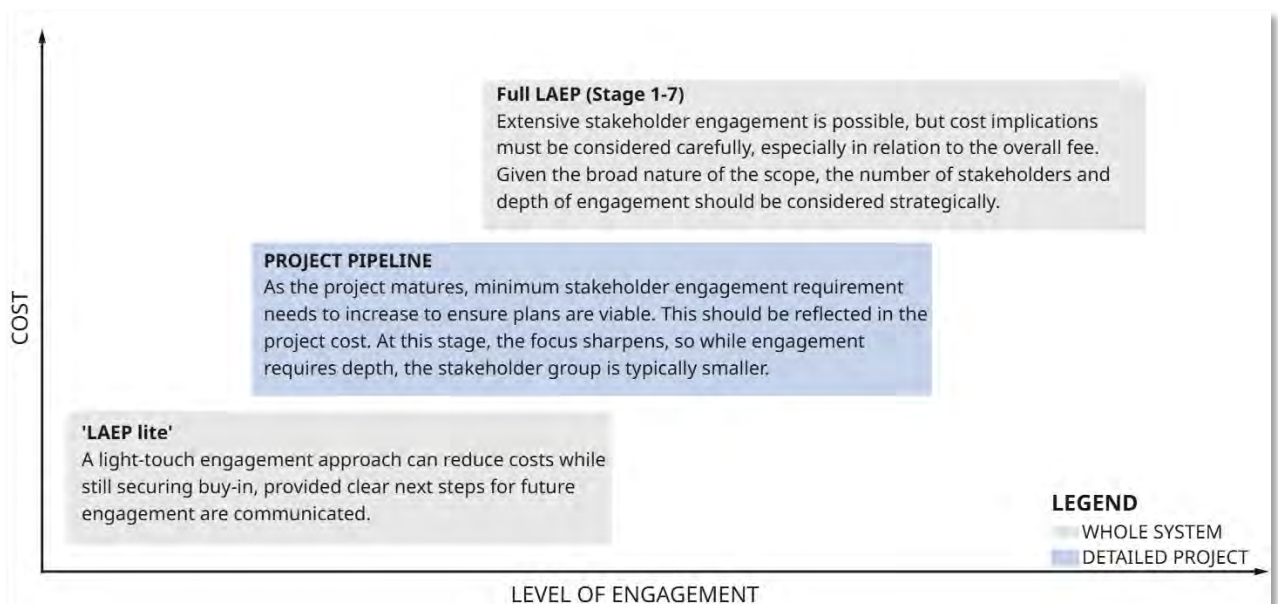


FIGURE 1: EXAMPLE OF COST DEPENDING ON LEVEL OF ENGAGEMENT AND MATURITY OF PROJECT.

How the Stakeholder Engagement Process Feeds into the Different Planning Stages and Considerations

The level of engagement, duration and ownership should form the basis of the Stakeholder Engagement Plan and Strategy. This should be clearly articulated. Figure 2 describes some typical stages of this plan in line with the planning stages.



FIGURE 2 LEVEL OF ENGAGEMENT FOR THE DIFFERENT STAGES OF THE PLAN

ITT development: set out clearly in the ITT any current perspective key stakeholders, the level of engagement expected, formats of engagement to be used, and how often engagement occurs.

Project initiation: clearly communicate any considerations in collecting data from stakeholders, specific communication requirements, and ownership of the process.

Modelling requirements: outline the expected process for stakeholder engagement during the modelling process including setting expectations, onboarding key stakeholder members, forming of groups, communication of outputs and tailoring stages for approval and/or wider dissemination.

Data outputs: it is important to understand whether stakeholders require outputs in a certain format and resolution, as described in previous guidance². Consideration should be given to how outputs will be delivered, communicated, visualised and managed. Any strategy should consider onward licensing, any specific software tools preferred and any formats required by third parties e.g. NESO and DNOs have specific requirements. See guidance³ for further detail.

Reporting and dissemination: Consideration should be given early on as to the format of any reports and how this should be tailored for communication to both internal and external stakeholders, including messaging, language, visualisation, and structure. *E.g. some authorities may consider a lighter report for external issue but an internal version with detailed appendices containing the background information.*

² B_Data resolution, data accuracy, data type guidance

³ C_Governance guidance

Examples of how Stakeholder Engagement Enhances the Plan

The receipt of stakeholder information can add considerable local context to the plan and the onboarding of stakeholders early on can ensure buy in to the outputs including raising the profile of planned outputs for consideration in investing and making the plan happen. Table 1 summarises some examples of information that could typically be expected during a LAEP process.

TABLE 1: EXAMPLES OF STAKEHOLDER INFORMATION ITEMS

Stakeholder information	Examples
Shared project opportunities	Planned road works which could influence the routing of a heat network, upcoming boilers replacements, planned retrofit budget allocation.
Plans	Infrastructure developments (e.g. planned heat networks), energy strategies, net zero commitments, Local Plan.
Ongoing programmes	Retrofit initiatives (e.g. warm homes), decarbonisation projects (e.g. solar schools), environmental projects (e.g. tree planting).
Target or priority areas	Geographic areas where stakeholders are focusing their efforts (e.g. Heat Network Zones, conservation area, areas of high deprivation)
Other stakeholder data	Any stakeholder datasets which could inform the project (e.g. industrial energy consumption, existing studies, measures already implemented)
Data format	Existing data formats, data structures, spatial identifiers. Note: This relates to all data shared (refer to guidance ⁴ for further information which can support stakeholder discussions).

In summary:

- Consider stakeholder engagement early on and its significance to the planning process
- Segment and categorise the stakeholders, their needs and their value
- Determine both inputs and outputs of the planning process
- Consider the costs and effort for different methods of engagement and how the timing needs to align with the planning process
- Ensure any specific formats and requirements for outputs by third parties are factored in
- Clearly outline expectations and ownership of the process to potential delivery parties in the ITT.

Please also refer to *Commissioning Considerations* which suggests some key stakeholders should be identified whilst setting up the specification.

⁴ B_Data resolution, data accuracy, data type guidance

Case examples

In-person workshop cost indication

As with all items the onus is on the response to the ITT to define the engagement strategy, however, it is important that suitable space within the response document and budget is assigned. As an indication of **cost associated with running a 3 hr in-person workshop**, the 3 hrs of the workshop would tend to be a maximum of 25% of the total costs associated with the workshop (due to travel to and from the workshop, material preparation, coordination, documentation of outcomes). With most consultant rates and at least three consultants attending this can be in the order of ~£5,000.

Engagement in ITT for Westminster, Local Area Energy Plan stage 1-7

The ITT outlined the following requirements:

- **Use case and requirements document:** developed together with the council and any steering group, to guide how energy mapping and scenarios would be used and ensure stakeholders needs were met post-project
- **Engagement plan:** creation of engagement plan with key stakeholders
- **Stakeholder list:** indicative list of approximately 40 stakeholders was provided in ITT, broken down into internal teams, other public bodies, other large landowners, energy distribution, and community groups
- **Clarity surrounding expectations:** preparation of materials to support stakeholder engagement, attending stakeholder engagement meetings, present engagement outputs to council.

National Energy & Environment Data Specification

E. Ongoing Use

July 2026

Version 001

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Term	Description
AI	Artificial Intelligence
API	Application Programming Interface
CCS	Crown Commercial Services
DNO	Distribution Network Operator
DSO	Distribution System Operator
DSA	Data Sharing Agreement
DT	Digital Twin
ESC	Energy System Catapult
EST	Energy Saving Trust
EV	Electric Vehicle
GIS	Geospatial Information System
HN	Heat Network
HNZ	Heat Network Zoning
IES	Integrated Environmental Solutions
ITT	Invitation to Tender
KML	Keyhole Markup Language
KPI	Key Performance Indicator
LAEP	Local Area Energy Plan
LSOA	Lower layer Super Output Area
MAGIC	Multi-Agency Geographic Information for the Countryside
ML	Machine Learning
NESO	National Energy System Operator
NEVIS	National EV Insights & Strategy
NEEDS	National Energy Environment Data Specification
PEAT	Portfolio Energy Assessment Tool
RESP	Regional Energy Strategic Plan
UPRN	Unique Property Reference Number

Introduction

The way outputs are defined and requested in the Invitation to Tender (ITT) will shape how they can be **used beyond the initial study**. Considerations should be taken to ensure outputs are suitable for future modelling, visualisation, and project portfolio development. This guidance expands on previous guidance documents (Commissioning decisions, Ongoing use) in the provided guidance pack which have already covered aspects such as data, stakeholder engagement and considerations during commissioning. Its aim is simply to consolidate and point to the key considerations. Outputs can be considered in the context of:

1. **Modelling requirements:** any modelling expected to be done post-project. This can help outline requirements for data structure and input formats, ensuring models can be integrated into wider strategic planning.
2. **Data outputs:** defines required formats, inclusion of spatial identifiers, assumptions log, metadata standards, support compatibility with internal and external stakeholder schemas, platforms and systems used for ongoing analysis and decision making (e.g. Geospatial Information System [GIS] platforms, dashboards, and other systems used for post-project).
3. **Reporting and dissemination:** outlines how outputs should be packaged for different audiences (e.g. technical teams, stakeholders, public facing materials), ensuring that the information can be used post-project in the most impactful way.

Figure 1 shows the considerations for ongoing use, split into the following focus areas:

- Key enablers of ongoing use
- Strategic delivery and action plan.

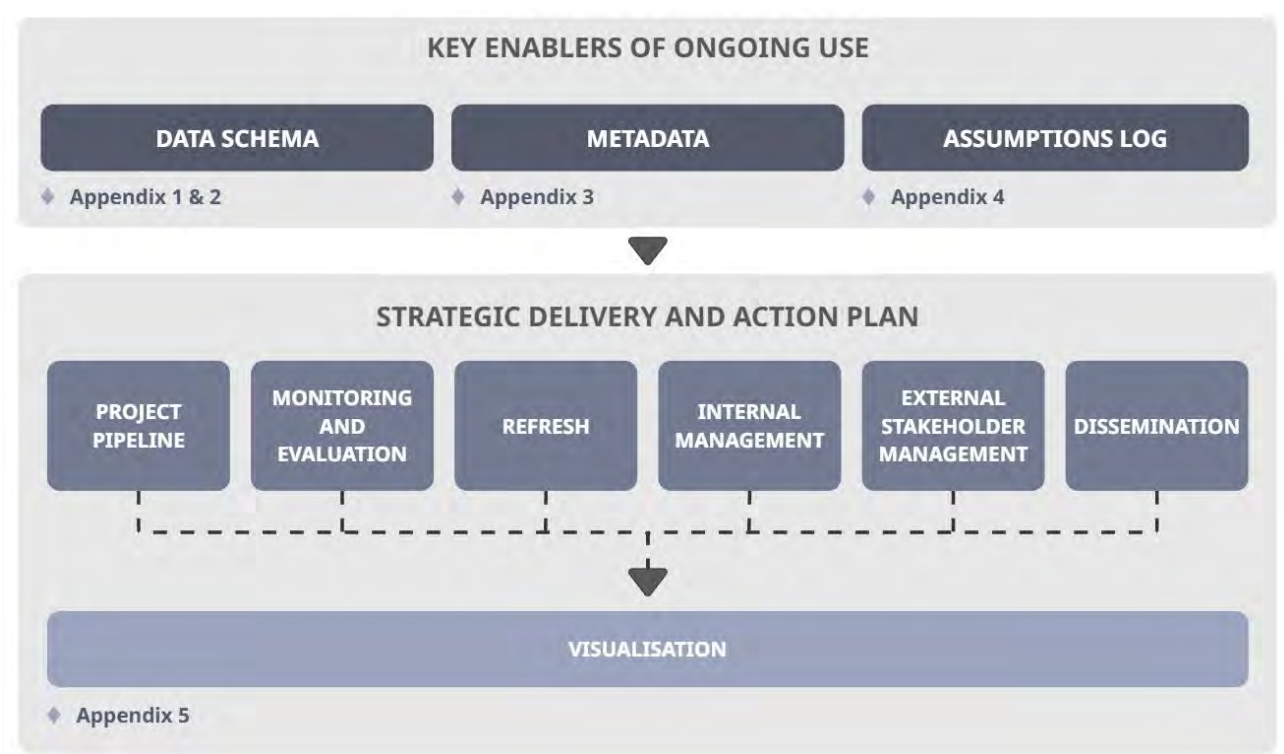


FIGURE 1: CONSIDERATIONS FOR ONGOING DEPLOYMENT AND MANAGEMENT OF PLAN

Key enablers and ongoing use

The ITT should be clear on the enablers required and ongoing use cases so that the appropriate preparation can be made. The three key areas are:

Data schema

Schemas provide a consistent structure for data. Including a schema in the ITT helps define the data outputs and formats. Provision of a data schema ensures that all required data is captured accurately and in a consistent way consistently. Standardised formats eases data ingestion, both into a local authority's own systems, and key stakeholder systems (such as Distribution Network Operators). Some examples are included in Appendix 1 and 2.

Case examples

Greater London Authorities (GLA) data schema for Local Area Energy Plans (LAEPs)

Greater London Authorities (GLA) have created a data schema to standardise the output data from Local Area Energy Plans (LAEPs) across the boroughs. The schema consists of a standardised format for energy vectors and considers:

- Uniform descriptors
- Current status
- Scenarios.

The schema aims to create a standardised set of outputs, enabling organisations to understand the LAEP, which supports action post-project.

Integration into Distribution System Operator (DSO)

UK Power Networks have created a data schema to standardise the ingestion of output data from LAEPs. Once ingested into internal systems, LAEP output data is essential for updating the Distribution Future Energy Scenarios (DFES).

Note: the ITT must specify that a data schema from the DSO must be populated if this is expected.

Metadata

Metadata is defined simply as data that provides information about other data. It helps to provide a structured way to reference and sort data. By requesting metadata, the organisation maintains a clear, auditable trail of data usage - it also supports data refresh.

Case example: GLA Metadata

GLA set up a metadata for the subregional LAEP to collect information about the data that was used during the project. Attributes which were established in the metadata were:

- Data input: name of data set
- Description: description of data set
- Temporal coverage: time period which the data relates to
- Geometry: defines spatial feature
- Spatial resolution: finest level of detail for spatial identifier
- Format source: data type
- Source link: link to dataset
- Date of harvest: date which the dataset was downloaded
- Update frequency: how frequently the dataset is updated at its source
- Access: information related to if the dataset is open or requires certain license agreements
- Source attribution statement: statement to acknowledge the provider or rights of use which the data is shared under
- Corresponding workflow diagram: tag to identify which part of the modelling that used the data.

Assumptions log

Many assumptions are made in LAEPs (and similar projects), which can be related to multiple factors including technology costs, policy impacts and funding availability or assumptions behind the scenario configuration and pathway selection. Some of these may be lost in time if not captured coherently during the planning process, risking losing cohesion on how the plan was developed.

Including an assumptions log as an appendix item is important to consider in the specification, as it is not unreasonable for assumptions to change after project completion. An example log is provided in Appendix 4.

Strategic delivery and action plan

The strategic level delivery aspects of plan, as well as the need for an action plan, are well defined in the Energy Systems Catapult (ESC) LAEP guidance document when considering LAEPs. But this could be applied to other forms of planning. Outlining this as a specific requirement is useful in the ITT providing guidance on what is expected to be issued and to what extent the planning process is to be delivered.

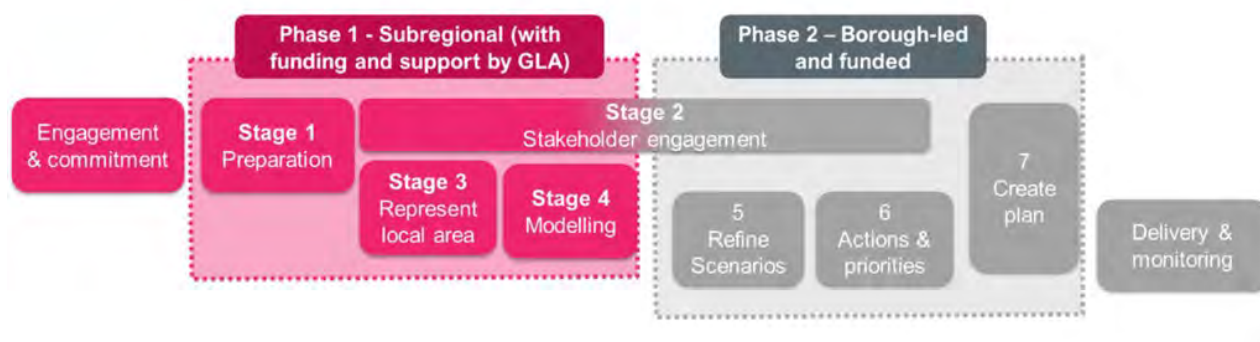


FIGURE 2 TWO-PHASE ROADMAP FROM PLANNING TO DELIVERY

Example – Buro Happold was commissioned to deliver the GLA’s subregional local area energy plan. It was clearly stated which areas this would cover and that it would go up to Stage 4 in accordance with the ESC guidelines and should be in a form that can be adopted by London Boroughs for onward planning in Stages 5-7.

Project pipeline

Often digital plans will be aimed at identifying discrete portfolios of potentially viable projects, known as the project pipeline. Inevitably this process requires more focus on accuracy, commercial models, funding alignment and presenting in a form that key stakeholders, potentially including investors, could take forward for further analysis.

A NEEDS survey found that project pipeline was the considered the most important LAEP output for local authorities that had previous experience completing a LAEP, as shown in Figure 2.

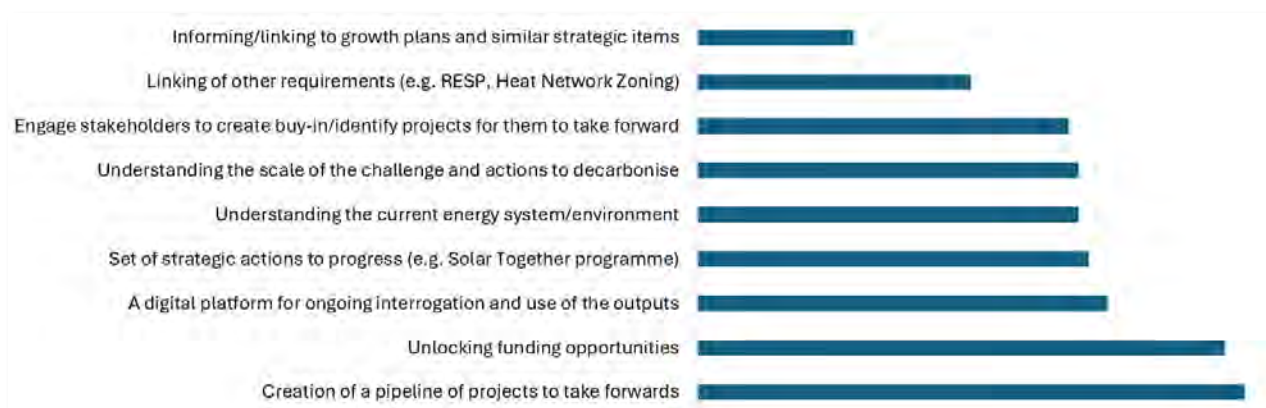


FIGURE 3: OVERVIEW OF RELATIVE IMPORTANCE OF DIFFERENT LAEP OUTPUTS TO LOCAL AND REGIONAL AUTHORITIES WHO HAVE COMPLETED A LAEP.

The second most important aspect identified is unlocking funding opportunities, where the outputs should be aligned with potential funding streams and business model structures.

Case example

Pipeline considerations for LAEP stage 1-4

If the focus of a commission is on a LAEP stage 1-4, it is important to consider if the lack of pipeline fulfils project requirements. If it does not, the need for a project pipeline should be addressed. It is also important to ensure the data is detailed enough to generate a project pipeline afterwards. The NEEDS Data Mapping Tool helps to define a suitable data resolution for this.

Typical Pipeline items in ITTs to consider include:

- Development of a long list e.g. 50 projects and which vectors/sectors these should ideally cover or whether they should be aligned to a specific pathway or scenario and KPIs.
- Details of which funding models and business models each project may align too
- Development of a short list of projects recommended to take forward based on their strengths
- The basis of prioritisation and selection of projects (e.g. requesting a multi-criteria analysis process)
- A summary or investor prospectus of each project identified which should consider aspects such as:
 - o CAPEX
 - o OPEX
 - o Carbon reduction
 - o Rate of deployment
 - o Technology
 - o Target market
 - o Funding available
 - o If possible, an indicative IRR

Monitoring and evaluation

Monitoring and evaluation refers to the mechanisms for tracking progress in delivering the plan and evaluating changes once the project is complete. This is an area often missed out of commissions, but which warrants a particular focus in enabling deployment.

Consideration should be given to development of an M&E framework which will:

- Establish the user requirements, reporting structures e.g. public and internal reporting outputs
- Embedding a process of learning and adaption with periodic reviews
- Defining Key Performance Indicators (KPIs) the local authority intends to track after the project, the ITT should specify these, as this will shape the modelling and output of the data. KPIs can also be defined as part of the plan, but this should be outlined in the specification
- Identifying key data sources for informing the metrics (e.g. rate of growth, number of installations, carbon saved)
- Implementation of a governance structure to manage data, information, and embed dissemination requirements
- Considering rates of refresh of data (see below).

Data Refresh

The data in the plan may require periodic refreshing if it is deemed critical to the planning outputs.

Examples include:

- Current and planned progress, which may deviate from the plan
- Change in policy and regulatory changes, which may impact key drivers and scenarios
- Stakeholder feedback, both internal and external which require adjustment to the plan
- Data improvements, which may impact assumptions and outputs
- Building stock changes, new projects, or demographic changes in an area.

Identifying triggers early on for refresh is highly recommended, considering aspects such as:

- How often the source data changes
- The extent of the change
- The influence on the plan and modelling process.

Internal management

For projects to be successful after completion it is important to create internal ownership within the local authority. This includes capacity building where needed. Items to consider in the specification would include:

- Creation of training sessions and materials
- Requirement for handover session to a relevant team within the Council – generally this would be the GIS team
- Linking the action plan and overall strategy to named departments or specific stakeholders within the Council. These should be agreed upon during the reporting process
- Regular engagement sessions by key stakeholders during the planning process
- Data and planning information in a suitable structure for ongoing management.

External stakeholder management

Identification of key external stakeholders and their engagement should form a major part of the LAEP process. Defining stakeholders critical to success of delivery and implementation of the plan is critical.

Some external stakeholders such as National Energy System Operator (NESO) or the Distribution Network Operator (DNO)/DSO may require formal engagement. The needs of these stakeholders should be considered in the tender and in relation to the final outputs.

If the commissioning organisation intends to share the data with third parties, there may be specific fields and data type requirements. It is not always possible to share data at a finer resolution with third parties so **managing expectations early on is key**. The governance guidance provides details of items to consider with onward sharing of data.

It should be considered whether a follow-on stage should be included as an option in the ITT to enable the team to continue engagement post plan and what structure this engagement may take.

The following items should also be considered:

- Map of key stakeholders for ongoing delivery and management:
- Specific data requirements including requirements for data updates to DSOs/DNOs/NESO. This is important as translation into any different data schemas has associated costs. (**Note:** the required formats are evolving so regular engagement with such parties is recommended)
- The format and structure of information including tools and templates to be used.

Dissemination

Dissemination relates to how the outputs are communicated; target audience should be considered, to ensure that outputs are meaningful and engaging.

Items that could be considered in the specification could include:

- Specification of report length and what it should focus on. Some ITTs specify a short report with a more detailed technical appendix
- Possible consideration of creation of two executive summaries, one for internal organisational use and one which is more focused as an external document
- Define any accessibility requirements
- Define any engagement activity and the number of events expected at the end of the project
- Consider data licensing and communication. This can be a complex item and requires extensive consideration; the Governance and Data guidance documents provide more detail of the key elements to consider in this context.

Visualisation is a key part of dissemination and considered in its own section below.

Visualisation

There are several options for visualising data. Commonly static GIS maps are included in LAEP reports. Interactive visualisation solutions are becoming increasingly popular in the LAEP and related spaces, including using visualisation platforms and digital twins (DTs). These are defined as follows:

- A visualisation platform ~~to~~ presents data interactively, often through the use of maps. This allows users to explore a range of datasets, view different scenarios and communicate findings. These platforms are generally static, and focus is on displaying information
- A DT provides dynamic solutions and can integrate live data to update systems real time.

A summary of tools with visualisation capabilities, that can be used for interactive output of LAEPs, is included in Appendix 5. This is not exhaustive, particularly in terms of platform providers, but provides an overview of the different typologies of LAEP visualisation tools.

The ITT should specify whether outputs should be disseminated in a digital or visualisation platform and outline the requirements in terms of access to the platform post-project, including governance and licensing terms. And as outlined above they can have can vary in terms of platform provider and is therefore not prescribed. Two examples are provided below:

Case Examples

Calderdale Council LAEP – a DT by Integrated Environmental Solutions (IES)¹

For the Calderdale LAEP, a digital twin was developed to represent the borough in an intuitive way. This dynamic 3D model maps every building and visualises key attributes (e.g. energy usage, heating type, and fabric information) through interactive dashboards and colour coded layers. Physics-based energy simulations were conducted to identify potential reductions in energy consumption and carbon emissions. The model also incorporates visualisation of renewable energy generation, transport, and power infrastructure.

There were complexities with licensing and sharing information at different levels of detail.

Note: Exclusive arrangement through IES is required. This means that you cannot name IES by name as a preferred solution in your ITT.

LAEP Lens Visualisation tool²

For the Leicestershire LAEP, the LAEP Lens Visualisation tool was used to present and explore the outputs. Built on ArcGIS, the tool provides open access to priority project opportunities, which are colour coded based on themes (e.g. local renewables, domestic fabric upgrades, low carbon heating, EV infrastructure, networks). Each opportunity includes a summary with supporting graphs for easy interpretation.

Customised views area available for key stakeholders:

- Local government
- Community energy group
- DNO
- Investors.

A summary of visualisation of existing datasets which can be used for particular applications is included in Appendix 6. This is not exhaustive, particularly in terms of platform providers. Many platforms allow users to export their data, but there may not be options for uploading data. In cases where it is possible to upload data, considerations should be taken to ensure that uploading of data is compliant.

¹ <https://www.iesve.com/services/projects/48826/calderdale-council-laep>

² [LAEP Lens Visualisation Tool | Greener Future](#)

Appendices

Appendix 1: Introduction for LAEP Data Schema used by GLA

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Overview

Workbook A key example is being able to explore early opportunities such as clusters of buildings for decarbonisation. The completed version of this is seen as a final output of a LAEP. It is suggested that when commissioning a LAEP this document could be included as an appendix in the ITT, to ensure that the winning bidder will provide data in a useable and detailed enough format for the local authority to continue to use after the LAEP commission is completed.

In some instances, not all fields will be applicable for completion (e.g. some heat networks will be new so not have any information relating to their status). Additionally, the level of detail may not be generated or required in all instances and would be left blank.

Data can be presented at different levels:

- With the domestic and non-domestic building stock this is considered most suitable at a property/building level. With transport this will generally be more applicable at the LSOA level (or similar combined scale), although large densities such as car parks could be presented at a precise location
- For heat networks most of the property level information is captured in the domestic or non-domestic level data, the data captured is thus more a summary of the heat network as a whole
- With rooftop PV the potential is captured at the domestic/non-domestic level, for the dedicated tab this is considered at an aggregated level as typically at a relatively fine scale of resolution an LAEP is somewhat neutral over which houses have PV deployed
- Large scale renewable opportunities are also captured; these should be tied to precise locations (i.e. x/y coordinates)
- Costs tend to be aggregated, due to issues like GDPR and commercial sensitivity as well as confidence levels. Indicatively LSOA is provided - this aligns to strategies like DNO future energy scenarios.

TABLE 1 INFORMATION TAB

1. Domestic	Contains uniform spatial outputs, non-technical descriptors, information relating to heating systems building fabric and building performance.
2. Non-domestic	Contains uniform spatial outputs, use description, information relating to heating systems building fabric and building performance.
3. Transport	Information relating to all vehicles which require charging infrastructure and vehicle use. Active travel is not captured as standard output and trains are excluded (being more suited to regional/national data capture).
4. Heat networks	Standard naming and ID categorisation of heat networks with information relating to demand (split by space heating and cooling as well as hot water) and heating technology and any waste heat sources.
5. Rooftop solar PV	Provides the option to provide information at UPRN or TOID or at summary level (indicatively LSOA). Information captured by generation and installed capacity.
6. Large scale renewables	Information relating to location (unlikely to be building linked), technology, ownership (focusing on public land), installed capacity and annual generation are also captured.
7. Costs	Cost data for different LAEP, indicatively this is at LSOA level rather than property/ building, but alternative geographies can and should be considered (e.g. primary substation for electrical infrastructure).

Appendix 2 : Domestic and non-domestic buildings uniform descriptors as part of LAEP Data Schema used by GLA

Data description	Data description	Data description	Property level output
Local Authority (Use GSS code)	11LA	String	
UPRN	11UPRN	Numeric (integer)	
TOID	11TOID	String	
X coordinate	11X	Numeric (integer 1m)	
Y coordinate	11Y	Numeric (integer 1m)	
LSOA code (Use GSS code)	11LSOA	String	
Ward (Use GSS code)	11Ward	String	
Property type	11Property	Drop-down	
Listed Building Status	11LB	Drop-down	
Conservation Area Status	11CA	Drop-down	
Tenure	11Tenure	Drop-down	
Fuel poverty likelihood (%)	11FPL	Numeric (integer)	
Age band	11AB	Drop-down	
Floor area (m2)	11GFA	Numeric (integer)	
Primary substation code	11pSC	String	
Tenure	11LA	String	
Fuel poverty likelihood (%)	11UPRN	Numeric (integer)	
Age band	11TOID	String	
Floor area (m2)	11X	Numeric (integer 1m)	
Primary substation code	11Y	Numeric (integer 1m)	

Appendix 3: Metadata example for a LAEP (file-level and including inputs and outputs)³

This schema is designed to record file-level metadata for all datasets used during the undertaken LAEP Phase 1 work and should include all inputs and outputs. Not all attributes are mandatory or may be applicable to all datasets.

Attribute Name	Description	Example value(s)	Data Type
Dataset Identifier	Unique numeric identifier for dataset.	01, 02, 03	numeric
Dataset Classification	Identifies if the dataset is an input, intermediate or output dataset. A transport sector example: - input: Department for Transport vehicles mileage statistics at local authority level - output: baseline or scenario assumptions applied, and vehicle mileage and energy demand modelled.	input, output	text string
Dataset Class & identifier	Concatenation of the dataset identifier and classification attribute	input_01	text string
Dataset Name	A short summary of dataset.	Primary Substation Demand Headroom, Conservation Areas	text string
Description	A detailed description of dataset.	Demand Headroom at UKPN Primary Substations	text string
Data Format	The file type format of the dataset.	.csv, .xlsx, .shp	text string
File name	Title of file name(s).	lbsm_v2.0_Oct2024.csv	text string
File location	Location of specific file(s) could be a SharePoint drive location or equivalent.	d:/data/input_datasets/buildings/	text string
Data Owner	The original data owner (completed for input datasets only).	UKPN	text string
Source URL	The website URL to where the data can be accessed (completed	https://www.ukpowernetworks.co.uk/our-company/open-data-portal	text string

³ <https://laep-datahub-alpha-cityhall.hub.arcgis.com/documents/f72dcbbbe30c643de9f310085fbe3f1b8/about>

Attribute Name	Description	Example value(s)	Data Type
	for input datasets only).		
Download URL	The specific URL that hosts the data, if available, the Application Programming Interface (API) endpoint.	https://ukpowernetworks.opendatasoft.com/api/explore/v2.1/catalog/datasets/ukpn-open-streetworks/records?limit=20	text string
Date of Harvest	The date(s) of when the data was harvested/downloaded from the source for the purpose of this project (completed for input datasets only).	1012025	Date (ddmmyyyy)
Temporal Coverage	The date(s) of the period the whole dataset covers, include specific dates of values selected (e.g.Q1 2024) where appropriate.	01012024 to 31122024	text string
Date Last Modified	The date the dataset was last edited/updated by the data owner.	1012025	Date (ddmmyyyy)
Data Refresh Frequency	How frequently the source data is updated (completed for input datasets only).	annual, quarterly, daily	text string
Spatial resolution	How frequently the source data is updated (completed for input datasets only).	London Borough, substation supply area	text string
Spatial geometry type	The geometry type of the dataset.	point, line, polygon	text string
Dataset Attribution Statement(s)	The source data attribution statement, this represents the text that needs to be reproduced to appropriately reference the dataset to a third party.	Ordnance Survey © Crown copyright and database right, 2024.	text string
Data licence details	Details of the licence conditions of the dataset. If public but has conditions	public data; restricted to use by PGSA members only.	text string

Attribute Name	Description	Example value(s)	Data Type
	attached, please state here. If not public, details of the licensing requirements should be recorded here.		
Data sensitivity	Where a dataset is not public, details of the nature of the restrictions in place.	attributes x/y/z to be redacted before sharing with stakeholders; data needs to be aggregated to LSOA level before making publicly available; can be shared with PGSA members.	text string
Comments	Any additional information that may be useful to the reader.	Source	text string
Entry Owner	Name of individual who shared the data and added the entry to the catalogue.	Sadiq Khan	text string
Date of Entry	Date entry was added to the catalogue.	1012025	Date (ddmmyyyy)
Received from	Name and contact of individual who provided the original dataset.	mayor@london.gov.uk	text string

Appendix 4: Assumption log example

ID	Theme	Category	Assumption	Originator	Detailed comment (if applicable)
1					
2					
3					
4					
5					
6					
7					

Appendix 5: Visualisation options for LAEPs

Visualisation for LAEP	Platform provider	Description	Cost consideration
Digital Twin	Varies – IES have one of the most mature examples, with a case study provided.	Dynamic solutions which provide a data-driven visualisation of a real-world system or environment. In the context of LAEPs this relates to a whole system view and can be linked to retrofit options, energy systems, infrastructure, and behaviours over time. Integration of live data and real time updates is possible.	Cost will have to be considered as part of the ITT and will vary depending on requested functionality. Costs for different stakeholders with different access as well as ongoing use of the platform should be considered.
LAEP+	Advance Infrastructure	Visualisation solution tailored to LAEPs which hold a range of different datasets for a whole system modelling.	LAEP+ is available for organisations through G-Cloud14 which is delivered through Crown Commercial Services (CCS).⁴ Some organisations can access the tool and datasets for free through their DNO. Note: sharing data with practitioner will incur a cost. This should be considered if the ask in the ITT is for practitioners to integrate data from the LAEP+ platform into their modelling.
Cadence⁵	City Science	Visualisation of open datasets with possibility to ingest spatial datasets from a LAEP. Creation of interactive map stories can be made in the tool.	Monthly cost which is tiered based on number of projects and enhancements. ⁶
ArcGIS⁷	ESRI	ArcGIS relates to ESRI's GIS software products and allows for creation, management, mapping and sharing of geospatial data. Story maps can be set up, and it allows for visualisation of outputs with a 3D setup for buildings.	Platform can be used through licensing, which most organisations and local authorities already have access. Data mapping and story maps can be set up by practitioners and be part of

⁴ <https://www.advanced-infrastructure.co.uk/g-cloud14>

⁵ <https://cadence360.cityscience.com/>

⁶ <https://cadence.cityscience.com/plans/>

⁷ <https://www.arcgis.com/index.html>

Visualisation for LAEP	Platform provider	Description	Cost consideration
			a LAEP. It also has increasing compatibility with Power BI, which can improve the outputs.
QGIS⁸	QGIS	Tool which is free to use and is used for modelling of LAEP. Outputs can be packaged up in a way so that the organisation can ingest the data into their platform.	Tool which is free to use and is used for modelling of LAEP. Outputs can be packaged up in a way so that the organisation can ingest the data into their platform.
Power BI⁹	Microsoft	Visualisation of data outputs, primarily in relation to graphs.	Platform can be used through licensing, which most organisations already have access to. Upskilling however may be needed, which can be included in the ITT for ongoing use.
Google Maps Platform¹⁰	Google	Platform which allows users to use data from Application Programming Interfaces (APIs) and visualise datasets by Artificial Intelligence (AI) prompts to create maps. Data is frequently updated to reflect real-world changes.	Pay-as-you-go or tiered monthly costs, depending on desired functionality ¹¹
Google Earth¹²	Google	If datasets are provided or converted into Keyhole Markup Language (KML) files, these can be taken into Google Earth to visualise outputs.	Uploading files directly into google earth to view layers is free of charge.

⁸ <https://qgis.org/>

⁹ <https://www.microsoft.com/en-us/power-platform/products/power-bi>

¹⁰ <https://mapsplatform.google.com/>

¹¹ <https://mapsplatform.google.com/pricing/>

¹² <https://earth.google.com/web>

Appendix 6: Companies and tools that offer visualisation of key LAEP datasets – this is not an exhaustive list

Visualisation Tool	Organisation	Theme	Ingesting	Cost consideration
Portfolio Energy Assessment Tool (PEAT) ¹³	Energy Saving Trust (EST)	Buildings	Visualisation of EST's building stock data which allows building of potential retrofit scenarios. Applications support retrofit pipeline studies. Tool can be used to assess applications related to the building stock but does not consider other energy vectors in a LAEP. It is not possible to ingest spatial datasets into the tool.	There will be a cost related to accessing the data and the tool.
Pathways ¹⁴	Cotality (previously Parity Projects)	Buildings	Visualisation of Cotality's building stock data, in combination with collated data from the organisation. Modelling gives insights to SAP CO2 and fabric performance. It is not possible to ingest spatial datasets into the tool.	There will be a cost related to accessing the data and the tool.
uZero ¹⁵	Urban Tide	Buildings, Place and community	AI and data insights platforms which integrates anonymised smart meter data in real time, provide fuel poverty prediction, and potential carbon savings.	There will be a cost related to accessing the data and the tool.
VU.CITY ¹⁶	VU.CITY	Buildings	Interactive 3D visualisation of buildings across UK, with the primary use case relating to local planning.	Cost depends on functionality requirement and number of licenses.

¹³ <https://energysavingtrust.org.uk/service/home-analytics/>

¹⁴ <https://www.cotality.com/uk/products/pathways#features>

¹⁵ <https://urbantide.com/uzero>

¹⁶ <https://www.vu.city/>

Visualisation Tool	Organisation	Theme	Ingesting	Cost consideration
Fairer Warmth ¹⁷	Centre for Energy Equality	Buildings, Place and community	Interactive platform designed for a range of users (e.g. individuals, organisations and communities, energy champions). The tool facilitates data collection for communities, which is visualised through interactive maps and dashboards, and combined with a range of other datasets to provide richer insights. Depending on the use case, it is available as both a web and mobile application.	There will be a cost related to collecting and accessing data and the tool.
PropertyView ¹⁸	Geospatial Insights	Buildings, Generation and storage	Visualisation of building information, including building characteristics, dimensions, solar potential, and conservation status.	There will likely be a cost related to accessing the data and the tool.
Compass: Energy ¹⁹	SimAnalytica	Whole System	Visualisation and analysis of whole system planning. Further information and demo required to understand capabilities and limitations.	There will likely be a cost related to accessing the data and the tool.
uMove ²⁰	UrbanTide	Transport	AI and data insights platforms which integrate integrates real time and historic transport data, to support understanding of travelling patterns. The platform validates data, allows for bespoke reporting, and allows for data sharing. It is possible to ingest spatial datasets, but caution should be taken	There will be a cost related to accessing the data and the tool.

¹⁷ <https://www.fairerwarmth.com/>

¹⁸ <https://geospatial-insight.com/solutions/propertyview-uk/>

¹⁹ <https://simanalytica.com/applications#Contact>

²⁰ <https://urbantide.com/umove>

Visualisation Tool	Organisation	Theme	Ingesting	Cost consideration
			so this is compliant with DSA.	
Compass: Transport ²¹	SimAnalytica	Transport	Visualise transport data, scenario modelling, network impact assessment. Platform allows existing data to be viewed and can be exported from the tool.	There will likely be a cost related to accessing the data and the tool.
National EV Insights & Strategy (NEVIS) ²²	CENEX	Transport	Toolkit to view and interact with NEVIS datasets in a Power BI interface as well as geospatial map view of some datasets. The tool allows users to download datasets.	Some datasets are available free of charge whereas some requires to be purchased.
LOCATE EV ²³	Geospatial Insights	Transport	Visualisation of Electric Vehicle (EV) related datasets to facilitate EV charge point network planning.	There will likely be a cost related to accessing the data and the tool.
LOCATE PV ²⁴	Geospatial Insights	Generation and storage	Visualisation of existing rooftop solar across UK, which has been modelled by using Machine Learning (ML) to identify solar arrays.	There will likely be a cost related to accessing the data and the tool.
LOCATE SOLAR ²⁵	Geospatial Insights	Generation and storage	Visualisation of a national rooftop solar suitability database. Supports in the identification of identification and deployment locations.	There will likely be a cost related to accessing the data and the tool.
Google Solar API ²⁶	Google	Generation and storage	Visualisation of tool which estimates rooftop solar potential based on rooftop imagery and ML	Pay-as-you-go or tiered monthly cost. ²⁷

²¹ <https://simanalytica.com/applications#Contact>

²² <https://nevis.cenex.co.uk/>

²³ <https://geospatial-insight.com/solutions/ev-infrastructure-planning-platform-locate-ev/>

²⁴ <https://geospatial-insight.com/solutions/locate-pv/>

²⁵ <https://geospatial-insight.com/solutions/rooftop-solar-suitability-database/>

²⁶ <https://gmp-environmental-solar.web.app/#intro>

²⁷ <https://mapsplatform.google.com/pricing/>

Visualisation Tool	Organisation	Theme	Ingesting	Cost consideration
			to predict rooftop solar potential.	
Multi-Agency Geographic Information for the Countryside (MAGIC) Map²⁸	Natural England	Built and natural environment	Visualisation of geographic information related to the natural environment from across government (i.e. rural, urban, coastal, and marine environments). Over 300 datasets are available. It is possible to ingest spatial datasets, but caution should be taken so this is compliant with Data Sharing Agreements (DSA).	Free and open access.
Compass: Climate²⁹	SimAnalytica	Built and natural environment	Visualise environmental data and assess climate change risk. Analyse impact of interventions.	There will likely be a cost related to accessing the data and the tool.

²⁸ <https://magic.defra.gov.uk/>

²⁹ <https://simanalytica.com/applications#Contact>

National Energy & Environment Data Specification

NEEDS Data Mapping Tool – user guide

July 2026

Version 001

This report has sponsored by the **Local Net Zero Hubs** and has been published by the **North West Net Zero Hub** supported with funding from the **Department of Energy Security and Net Zero**.

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Introduction

The NEEDS Data Mapping Tool supports local authorities in defining clear, structured, and procurement-ready data requirements when commissioning a Local Area Energy Plan (LAEP).

The tool enables authorities to:

- Translate strategic ambition into analytical requirements
- Understand data requirements for local area energy planning
- Identify required datasets and data fields for specific use cases
- Understand governance implications for datasets
- Produce structured data schedules for procurement.

The NEEDS tool has been created to help users understand their data requirements to support local area energy planning and wider energy planning processes. Including the NEEDs specification outputs as an appendix in any LAEP or energy planning procurement document will help prospective consultations or organisations looking to bid for your work, understand exactly what data is required of your project and therefore how to accurately produce a brief and a quote to meet your needs.

Using the Tool

To use the tool users only need to use the tab titled “1 Specification”.

The other tabs in the tool either provide supplementary information or contain binary lookup tables that provide the logic engine for the tool. They have been included for users that wish to explore in more detail how the tool works or require supplementary information for procuring data for energy planning.

Getting Started – Overview of the Tabs in the NEEDS Mapping Tool

Number	Title of the tab	What the tab does	Description of the tab
0	Read Me	Supplementary information	Contains essential guidance before interacting with the tool. It explains the four-stage workflow, core vs enhancement applications, and how outputs are structured
1	Specification	Primary working interface	Users select the LAEP type, confirm core applications, select enhancement applications, and review the generated data requirements.
2	Glossary	Supplementary information	A glossary of terms for users.
3	Evaluation input datasets	Supplementary information	Evaluates the free and commercially available datasets as inputs into LAEP.
4	Evaluate benchmarking dataset	Supplementary information	Evaluates the datasets that can be used to benchmark LAEP results for energy, carbon and cost.
5	Type of LAEP	Back-end tool structure	Maps different LEAP applications as either core to a LAEP or part of an enhanced LAEP, to the point in the LAEP seven stage process where it would be undertaken.
6	Theme to application mapping	Back-end tool structure	Maps the different LAEP applications by thematic area
7	Application to dataset mapping	Back-end tool structure	Maps the different LAEP applications to the specific types of dataset required to undertake those applications.
8	Dataset to data field mapping	Back-end tool structure	Breaks down the high-level datasets into individual data fields, ensuring procurement requirements are precise and unambiguous.
9	Dataset to governance mapping	Back-end tool structure	Identifies governance characteristics such as data ownership, licensing constraints, privacy classification, and sharing limitations.

Core Workflow – Using the Specification Tab

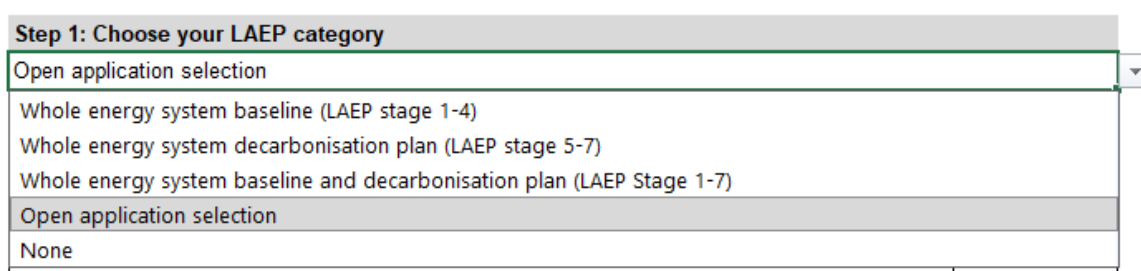
The Specification tab is the primary working interface. Users select the LAEP type, confirm core applications, select enhancement applications, and review the generated data requirements. It is coloured **green** in the tool, along with the read me for how to use the tool.

Selections cascade through the mapping structure to generate required datasets and data fields.

Step 1 – Choose your LAEP Category

In step 1, users should choose what time of LAEP they are looking to undertake or procure. They do this by selecting from the drop-down menu. The selections are based on Energy System Catapult's seven-step LAEP and commonly procured combinations of those stages. They include:

- Whole energy system baseline (LAEP stages 1-4)
- Whole energy system decarbonisation plan (LAEP stages 5-7)
- Whole energy system baseline and plan (LAEP stages 1-7)
- Open application selection
- None.



Step 1: Choose your LAEP category	
Open application selection	▼
Whole energy system baseline (LAEP stage 1-4)	
Whole energy system decarbonisation plan (LAEP stage 5-7)	
Whole energy system baseline and decarbonisation plan (LAEP Stage 1-7)	
Open application selection	
None	

When the type of LAEP is selected, the tool will automatically pull through the core applications associated with that LAEP into the next step of the specification page, 'Review the core applications'

How step 1 has been built in the tool: Step 1 on the specification page is linked to tab 5 in the NEEDS tool – Type of LAEP. This page maps different applications to types of LAEP which then pulls through the information when the specific type of LAEP is selected.

Step 2 – Review the Core Applications

In section two you will see the core applications associated with the type of LAEP that you have selected and be asked to review these applications. Core applications represent fundamental analytical requirements such as: Baseline energy system assessment, demand modelling or infrastructure assessment. These are typically required for all LAEPs.

Step 1: Choose your LAEP category

Whole energy system baseline (LAEP stage 1-4)

Step 2: Review the core applications

Application	Type
Warm homes funding opportunities	Core
Complete baseline of current domestic building stock energy demands	Core
Non-domestic property suitability for heating system decarbonisation	Core
Domestic property suitability for heating system decarbonisation	Core
Social/local authority domestic property suitability for heating system decarbonisation	Core
Public sector/local authority non-domestic property suitability for heating system decarbonisation	Core
Communal heating system opportunity areas	Core
Social housing decarbonisation fund opportunity areas	Core
Heat demand mapping	Core
Electrification of heat opportunity areas	Core
Existing car park charging	Core
Existing home-based charging	Core
Transport usage mapping	Core
Identification of priority areas for on-street charging locations	Core
Identification of priority areas for off-street charging	Core
Driveway mapping for off-street EV charging	Core
Public Fleet - Depots	Core
Public Fleet - EV Charging Capacity	Core
Solar capacity mapping	Core

Step 3 – Select Enhancement Applications

In this section, users can select applications to enhance their local area energy plans. Many LAEPs are tailored to meet the needs of places, and the enhancement applications can help boost local area energy planning processes to meet either:

- The geographic characteristics of a place (e.g. a coastline or highland area)
- The economic characteristics of a place (e.g. urban vs rural economies or areas with significant deprivation)
- The strategic goals of a place (e.g. an area or region has identified flexibility as being a priority target).

The enhancement applications are broken down across eight thematic areas. In some cases, core applications also have an enhancement option - this enhancement often involves the use of additional data to add granularity and provide more detail to those applications.

Enhancement applications could add: Additional modelling depth, sector-specific analysis or advanced scenario testing. Selecting enhancements typically increases dataset requirements.

Step 3: Select to include these enhancement applications per theme. Core applications are automatically included

Buildings	Include?
Able to pay indication	
Complete baseline of current domestic building stock energy demands (enhanced by smart meter)	
Cooling requirements	
Domestic fabric retrofit opportunities	
Domestic fabric retrofit opportunities (enhanced by smart meter)	Yes
Domestic heat pump opportunity areas	No
Domestic property suitability for heating system decarbonisation (enhanced by smart meter)	
Electrification of heat mapping	
Electrification of heat mapping (enhanced by smart meter)	
Heat demand mapping (enhanced by smart meter)	
Identification and prioritisation of fabric retrofit requirements and costs (own/social housing stock)	
Identification of at risk demographics	
Integration of planning and growth plan data	
Non-domestic fabric retrofit opportunities	
Non-domestic property suitability for heating system decarbonisation	
Planned development mapping	
Social/local authority domestic property suitability for heating system decarbonisation (enhanced by smart meter)	

Generation & Storage	Include?
Focus areas for smart meter deployment	
Focus areas for storage	Yes
Large scale ground mounted solar opportunities	No
Large scale ground mounted wind opportunities	
PV potential on rooftops of charging hubs	
PV rooftop potential (enhanced by smart meter)	
Solar capacity mapping (enhanced by smart meter)	
Solar car park opportunities	
Solar investment programme opportunity areas	
Suitability for electrical storage	
Suitability for electrical storage (enhanced by smart meter)	
Suitability for thermal storage	
Wind deployment opportunities	

Transport	Include?
Bus/coach decarbonisation	
Car park charging opportunities	
Charger requirements based on new developments and population growth	Yes
Depot charging	No
Emergency vehicle charging hubs	
Existing home-based charging (enhanced by smart meter)	
Existing public charging infrastructure	
Fleet charging	
Fleet decarbonisation	
HGV charging hubs	
HGV decarbonisation hubs	
Home-based charging opportunities	
Home-based charging opportunities (enhanced by smart meter)	
Hydrogen charging hubs	
Identification of potential locations for large/rapid EV charging hubs	
Identification of potential PV canopies on car parks	
Identification of public transport charging hubs	
LEVI funding opportunity	
Low Carbon Transport Hubs	
Park and ride opportunities	
Public charging infrastructure opportunities	
Slow overnight charging hubs (LEVI funding)	
Transport poverty identification	

How step 3 has been built in the tool: Step 3 on the specification page is linked to tab 6 in the NEEDS tool – Theme to application mapping. The different LAEP applications have been mapped to specific themes, including buildings, transport, network infrastructure etc. Tab 6 Theme to application mapping uses a binary mapping system which allows users to select by theme which additional applications they may want to include as part of

Step 4 – review your data specification

Step four shows you all the types of data inputs you will require to undertake the applications of your chosen type of LAEP and any enhancements. The inputs are shown by the name of the dataset, the fields you will require for that dataset as well as a description of those fields and units. This will help ensure that you accurately procure the right kind of data to support the delivery of a local area energy plan, or any of the enhancement applications.

Alongside the names of the datasets, there is governance information which provides insight on the granularity of the available data, license requirements, data source, data sensitivity and cost implications.

Columns included in the data specification – part 1

Step 4: Review the Data Specifications		
No. of matching datasets: 53		
Dataset 1 Areas of outstanding natural beauty and National Parks	Field Land parcel Local authority Name of AONB	Description Land parcel area Local authority area Name of the area of outstanding natural beauty
Dataset 2 ASHP Suitability	Field UPRN LSOA Building Area Overall Rating Suitability Recommended Heat Pump Peak Heat Pump Demand	Description Unique Property Reference Number Lower Layer Super Output Area The estimated building footprint area, used to plan under floor and roof insulation, from the The overall suitability of the property for a ground source heat pump The recommended heat pump size for the property The modelled peak building heat demand of the property
Dataset 3 Building age	Field UPRN Postcode Building Code(s) Building Code Description Building age Building construction material	Description Unique Property Reference Number Postcode Building code outlining type and use of building Building description of the code outlining type and use of building The age of the building or era when it was built The material that the building is made from

Columns included in the data specification – part 2

Data Source UK/Devolved Government	Granularity of input data Land parcel	Update frequency Ad-hoc	License Open Government License	Data sensitivity	Cost implications Free, open dataset
Data Source Consultant/Practitioner Commercial source (other) Open source (other)	Granularity of input data Building (Parent UPRN) Property (UPRN) LSOA	Update frequency Ad-hoc	License OS Public Sector Geospatial Mapping Open data license Commercial License	Data sensitivity	Cost implications Free and commercial options - commercial data will be more granular and incur a cost but add value
Data Source Commercial source (other)	Granularity of input data Building (Parent UPRN) Property (UPRN)	Update frequency Ad-hoc	License OS Public Sector Geospatial Mapping	Data sensitivity	Cost implications Commercial dataset which may incur a cost but add value

How step 4 has been built in the tool: Step 4 on the specification page pulls through information stored on tabs 7, 8 and 9 in the tool.

- Tab 7 Application to dataset mapping maps the specific datasets needed to support each use case or application that might be undertaken as part of a LAEP.
- Tab 8 Dataset to data field mapping then lays out what data fields or columns you might expect with each of these datasets
- Tab 9 Dataset to governance then maps out the governance requirements that you might typically expect for each of these datasets.

By combining these tabs into step 4, when users select which applications they would like to undertake as part of their energy planning process, the tool pulls the relevant information from each of these tabs and organises into a single spreadsheet that lists:

1. The datasets that they will need to procure/access as part of the LAEP process
2. The data fields that should be expected with those datasets
3. The governance of those datasets, including data sources, data sensitivity, data granularity and where the data may incur additional costs

Tool mapping structure and logic

The tool follows a cascading logic structure:

- LAEP Type → Applications → Datasets → Data Fields → Governance Requirements.

Each selection activates structured mappings in supporting tabs:

- 5 (type of LAEP)
- 6 (theme to application mapping)
- 7 (application to dataset mapping)
- 8 (dataset to data field mapping)
- 9 (dataset to governance mapping).

The logic and mapping tabs are all coloured **blue** in the tool.

Tab: 5 Type of LAEP

Purpose: Maps different LEAP applications as either core to a LAEP or part of an enhanced LAEP, to the point in the LAEP seven stage process where it would be undertaken.

Use: When users select which type of LAEP/LAEP process they are wanting to procure, this tab is the engine that populates which core applications pull through to the specification page.

Tab: 6 Theme to application mapping

Purpose: Maps the different LAEP applications by thematic area.

Use: This tab helps organise the 100+ applications in the NEEDS tool. It is why users can select enhancement applications by theme on the specification page and is the engine that drives step 3 in the NEEDS tool process where users can select individual applications from the different themes.

Tab: 7 Application to dataset mapping

Purpose: Maps the different LAEP applications to the specific types of dataset required to undertake those applications.

Use: This tab is the primary dependency engine of the tool. If an application is selected, this tab then determines which datasets become links and therefore pull through to the specification page. This ensures traceability from analytical need to data requirement.

Tab: 8 Dataset to data field mapping

Purpose: Breaks down the high-level datasets into individual data fields, ensuring procurement requirements are precise and unambiguous.

Use: This tab is the engine that drives the data fields outputs in the specifications tab. When users select their applications and therefore dataset requirements, this tab populates what data fields user should expect from those datasets, helping to clarify procurement needs.

Tab: 9 Dataset to Governance

Purpose: Identifies governance characteristics such as data ownership, licensing constraints, privacy classification, and sharing limitations.

Use: This tab is the engine that drives the governance information outputs in the specifications tab. Its outputs help users understand governance specifics for each dataset, including, data protection compliance, procurement risk assessment and early identification of restricted datasets.

Supplementary Information Tabs

Please note, the NEEDS tool itself does not list the exact dataset that users will need and where to get it, as there are often several different sources of data that could serve the same purpose (some of these may be free dataset and some may incur a cost but will add value due to additional granularity or detail). These are choices for users to make as to how much detail you need for the input data, based on how granular the outputs need to be.

The tool lets users know the type of data needed to procure or access as part of the LAEP process. In some cases, this is a straightforward, free, open dataset that is used by all (e.g. indices of deprivation, DNO data on network capacity, etc). In other cases, it might be that the data you need is modelled and can be created by your LAEP provider or purchased and licensed separately (e.g. air source heat pump suitability, onshore wind opportunities, derived/modelled energy demand data, etc). In some case it might be that the purchase of additional data can support an enhancement of a core application (e.g. procuring smart meter data to enhance granularity and detail of domestic building energy use).

The supplementary information tabs are to be used together with the NEEDs tool. They add further detail and clarity to the tool outputs, including evaluating both free and commercially available datasets and outlining where to find datasets used to benchmark LAEP results. These tabs are coloured **orange** in the tool

Tab 3 – Evaluation of Input Datasets

This tab evaluates the free and commercially available data sets as inputs into LAEP. It provides assessments for data sets by:

- Granularity
- Completeness
- Accuracy issues
- Update frequency
- Cost.

Users can use this tab as a guide to what data sets are most appropriate to use, and what to expect from them when specifying the type of LAEP/energy masterplan.

Tab 4 - Benchmarking Datasets Evaluation:

This tab evaluates the data sets that can be used to benchmark LAEP results for energy, carbon, cost. It assesses data sets by:

- Granularity
- Completeness
- Accuracy issues
- Update frequency
- Cost.

Users should use this tab to as a guide on benchmarking results/outputs from a LAEP/energy masterplan, against other available data sets.

Tab 1 – Glossary

This is glossary of terms found throughout the tool that user may need explaining.

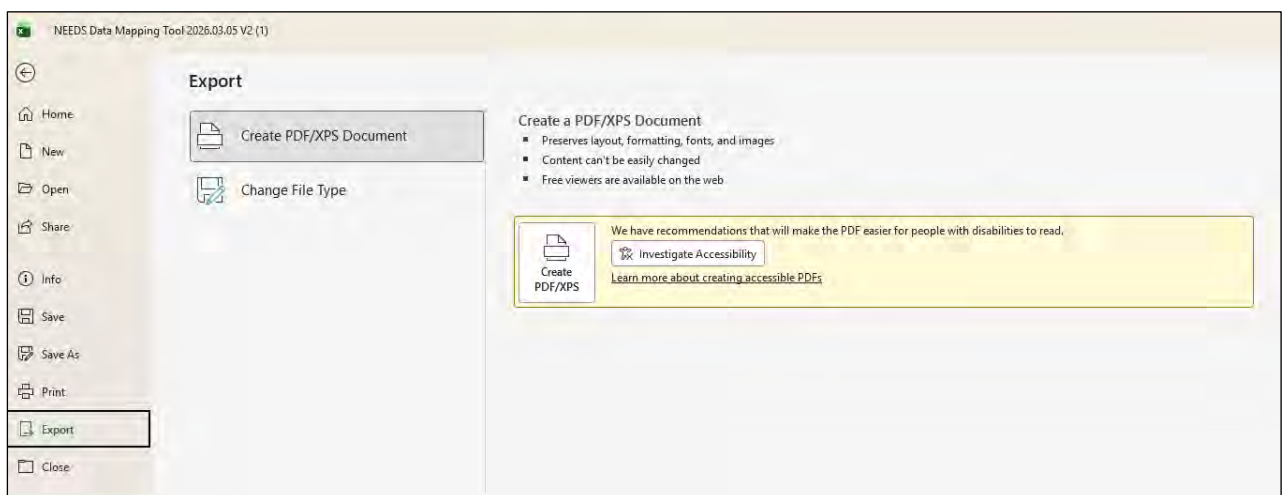
Exporting your Data Specification from the NEEDS Tool

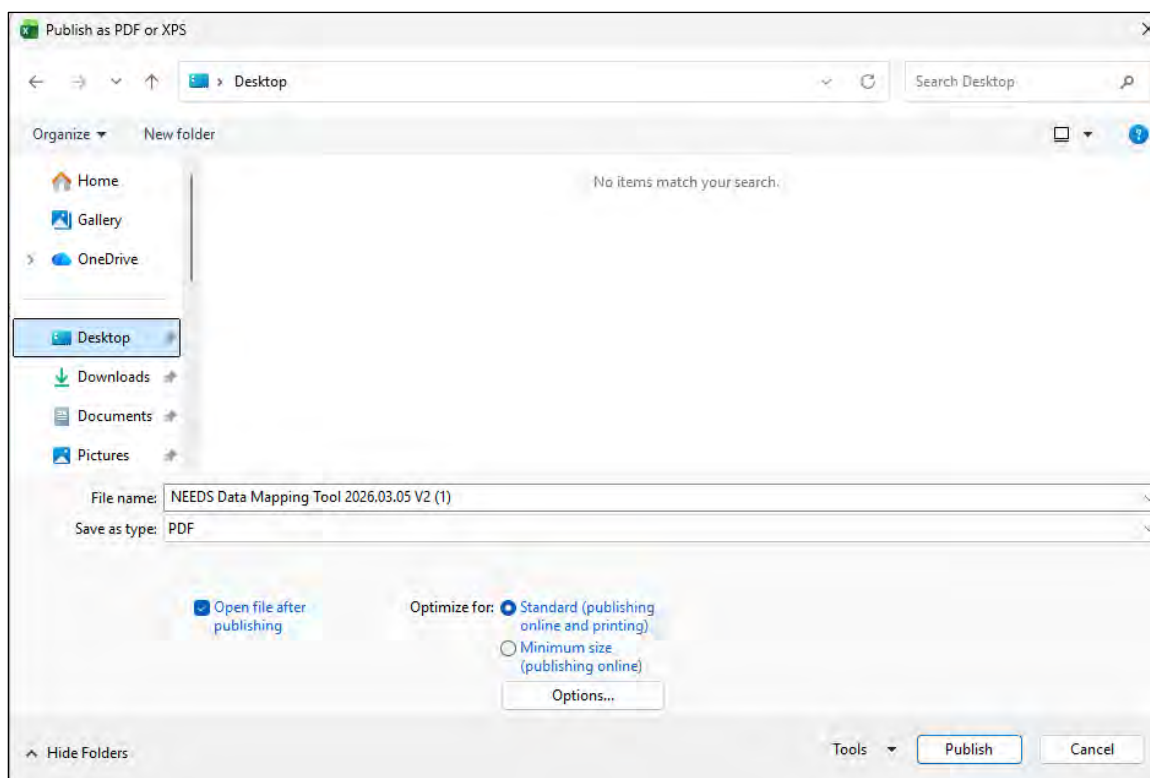
The NEEDS tool has been created to help users understand their data requirements to support local area energy planning and wider energy planning processes.

Including the NEEDs specification outputs as an appendix in any LAEP or energy planning procurement document will help prospective consultations or organisations looking to bid for your work, understand exactly what data is required of your project and therefore how to accurately produce a brief and a quote to meet your needs.

To export your specification as a PDF that can be appended to a procurement document follow these instructions:

1. When you have completed your specification in tab '2 Specification', review to check you have completed all the sections and are happy with the results
2. Click the 'File' button in the top left hand corner of Excel
3. Select the option 'Export' from the menu
4. Select 'Create PDF/XPS Document' and then click on the 'Create PDF/XPS' button in the yellow box
5. Select a folder in which to save the PDF export, give it an appropriate name and then click 'publish'
6. This will then export the specification as a PDF with the correction information about your chosen LAEP type, enhancement applications and data requirements.





When saving the PDF, do check underneath the 'File name' that the 'Save as type' clearly says 'PDF'.

Notes for Saving and Exporting

The process of saving and exporting may change depending on what version of Excel you are using or if you are using a PC/Mac. In some cases, you may need to:

1. Hover over 'Export' in the 'File' menu, and a second drop down menu will appear, in this menu select 'Download as PDF'
2. Click on 'Export' in the 'File' menu and a pop-up box will appear where you can select 'Download as PDF'
3. If you are unclear how to select export, use Excel's help function to ask where to find this feature.

Document Sizes

Please also note that the specification pages are extremely large in size. If you try to print onto A4, the text will appear unreadable. A PDF export of the specification will allow anyone reading the document online to zoom in to view the data specification at an appropriate text size.