

National Energy & Environment Data Specification

NEEDS Data Mapping Tool – user guide

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Version 001

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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

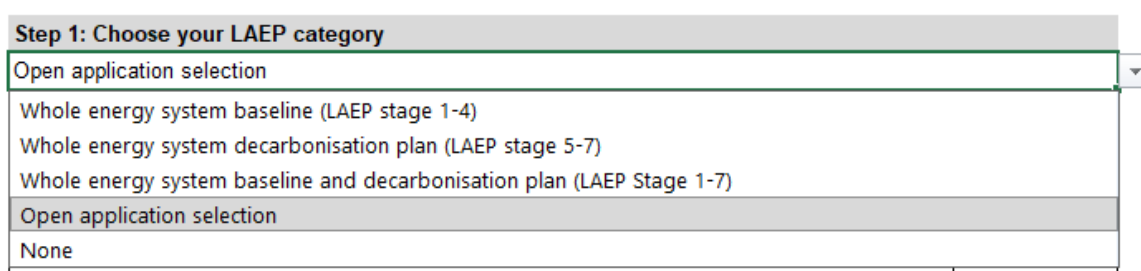
The Specification tab is the primary working interface. Users select the LAEP type, confirm core applications, select enhancement applications, and review the generated data requirements. It is coloured **green** in the tool, along with the read me for how to use the tool.

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.

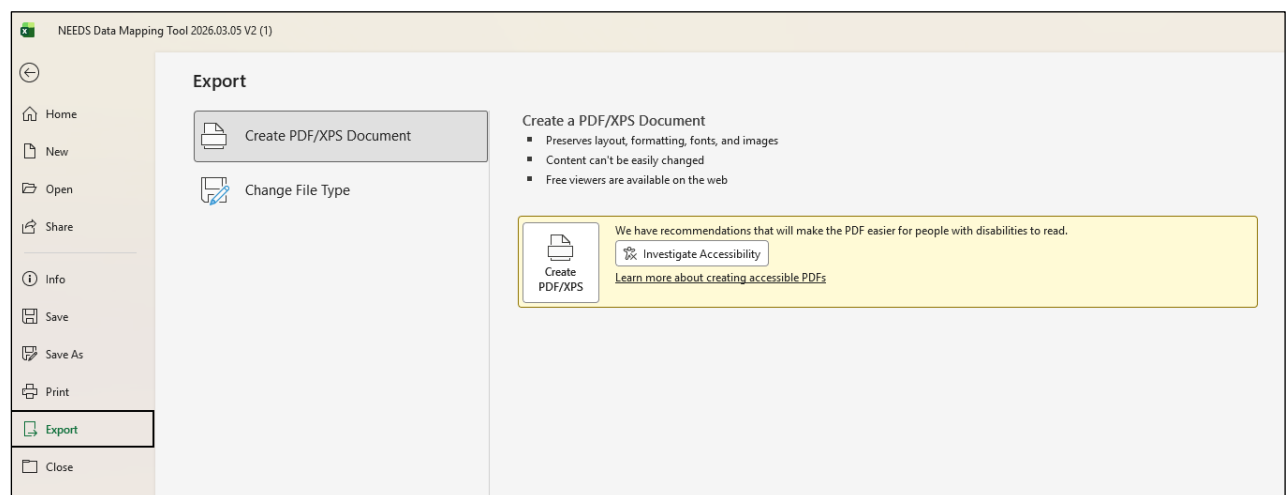
Exporting your Data Specification from the NEEDS Tool

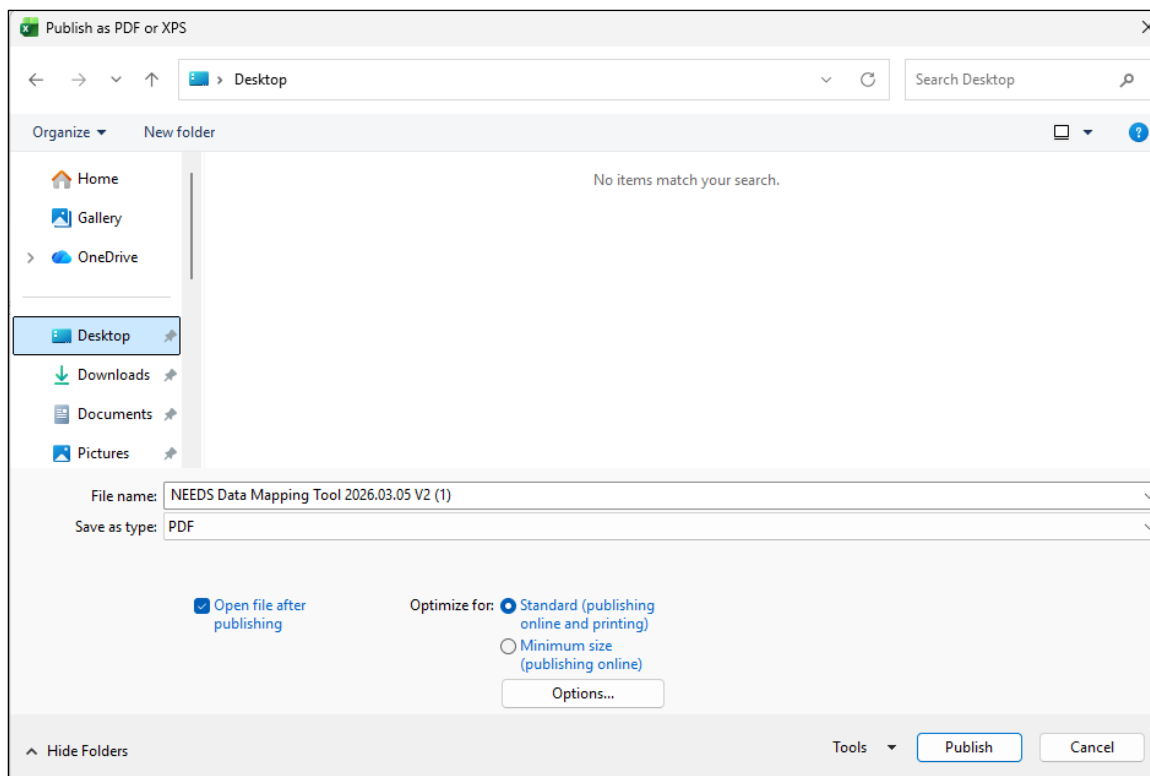
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To export your specification as a PDF that can be appended to a procurement document follow these instructions:

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.