Department for Energy Security & Net Zero

Ready for RESP:

Net Zero Planning Masterclass: Renewable generation and storage

Greater South East Net Zero Hub

MIDLANDS NET ZERO HUB

north east & yorkshire NET ZERO HUB

north west net zero hub

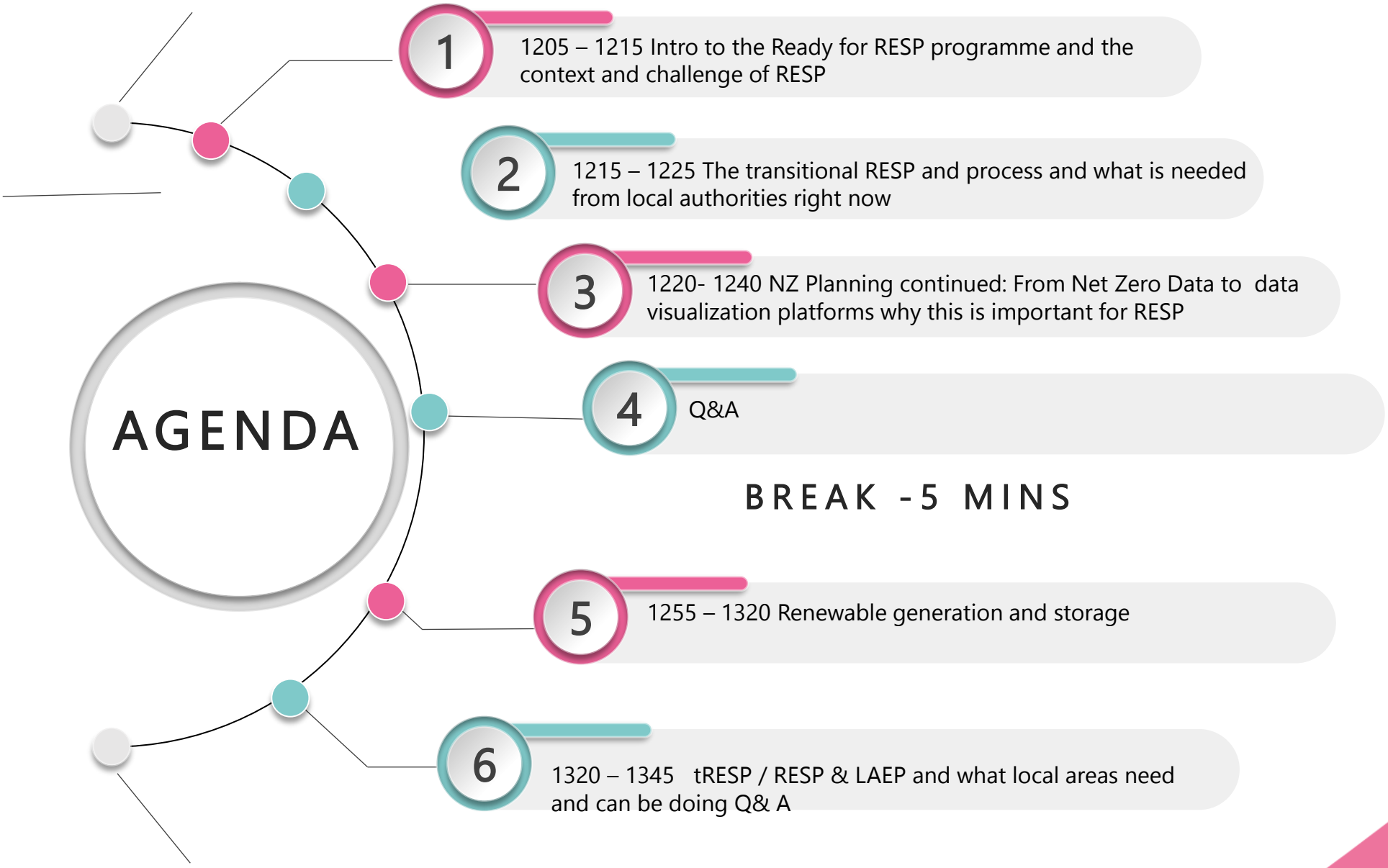
South West NET ZERO HUB

Programme delivered by CATAPULT Energy Systems

Catapult team:
Chris Brierley, Dr Anna Stegman, David Lee & Jack Stephenson

Housekeeping

12.00: Welcome & Introductions



13.45: Wrap up

Ready for RESP

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Ready for RESP

Literature review, stakeholder consultations, and Catapult experience collated

Library of evidence collated

Series of simple language guides
1: Ready for tRESP
2: Ready for RESP
3: Local Government Resourcing plan
4: Local Net Zero Plan Guidance

Hub engagement plan

Game style workshop to bring the interactions of local and regional stakeholder objectives together, demonstrating the value RESP and planning can provide.
Plus follow up in person regional sessions

Change Management training day

Deliver subject specific webinars (buildings, renewable generation, energy networks, transport, industry, hydrogen)

National stakeholder engagement plan

Disseminate guides with 3 interactive online briefing sessions for each region

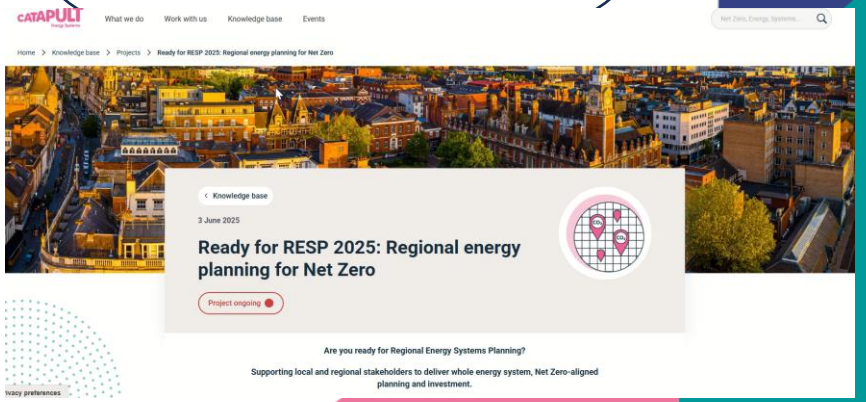
LA survey and findings to understand regional readiness for Local Net Zero planning

Briefing notes to summarise Guide content for different audiences

Outputs from each activity hosted on Net Zero Go

HEURISTIC

IMPACT FACTORY



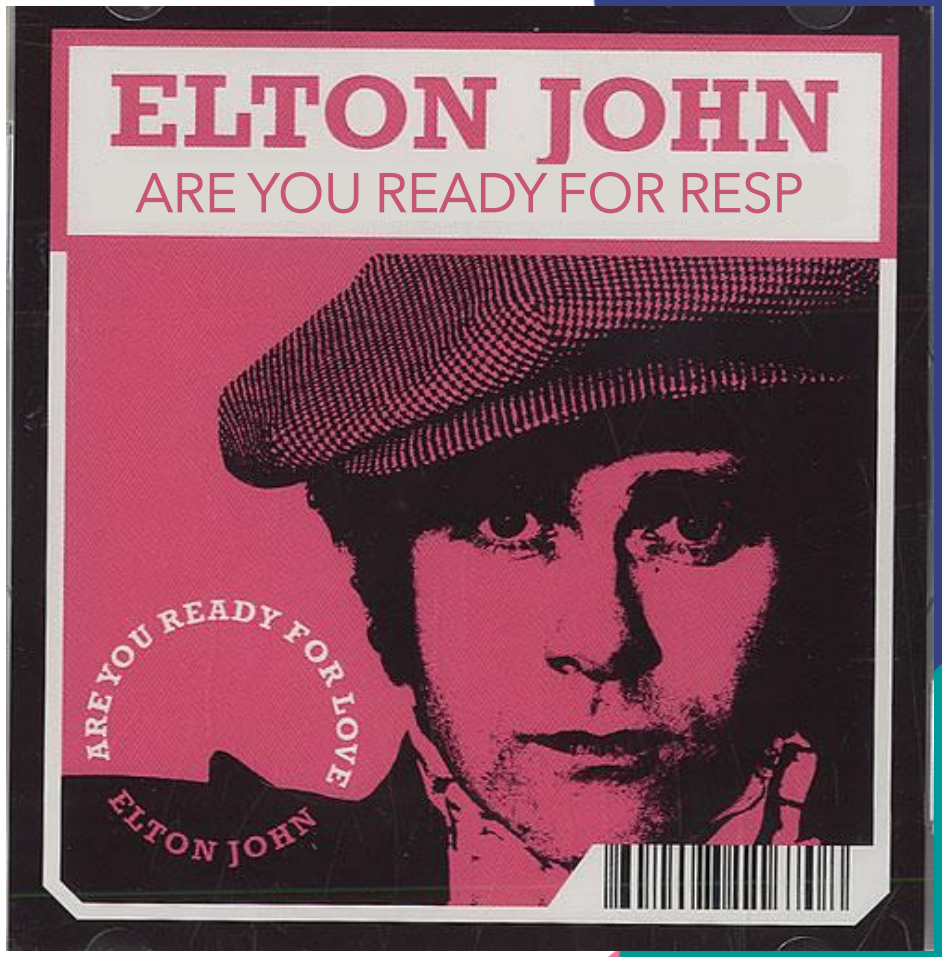
Ready for RESP

QUICK POLLS:

- At our last session general feeling was confusion around RESP – has this changed? What are your current thoughts relating to RESP and tRESP?

- Have you been approached by local authorities in your region about tRESP or RESP?

- If yes – what are they asking?



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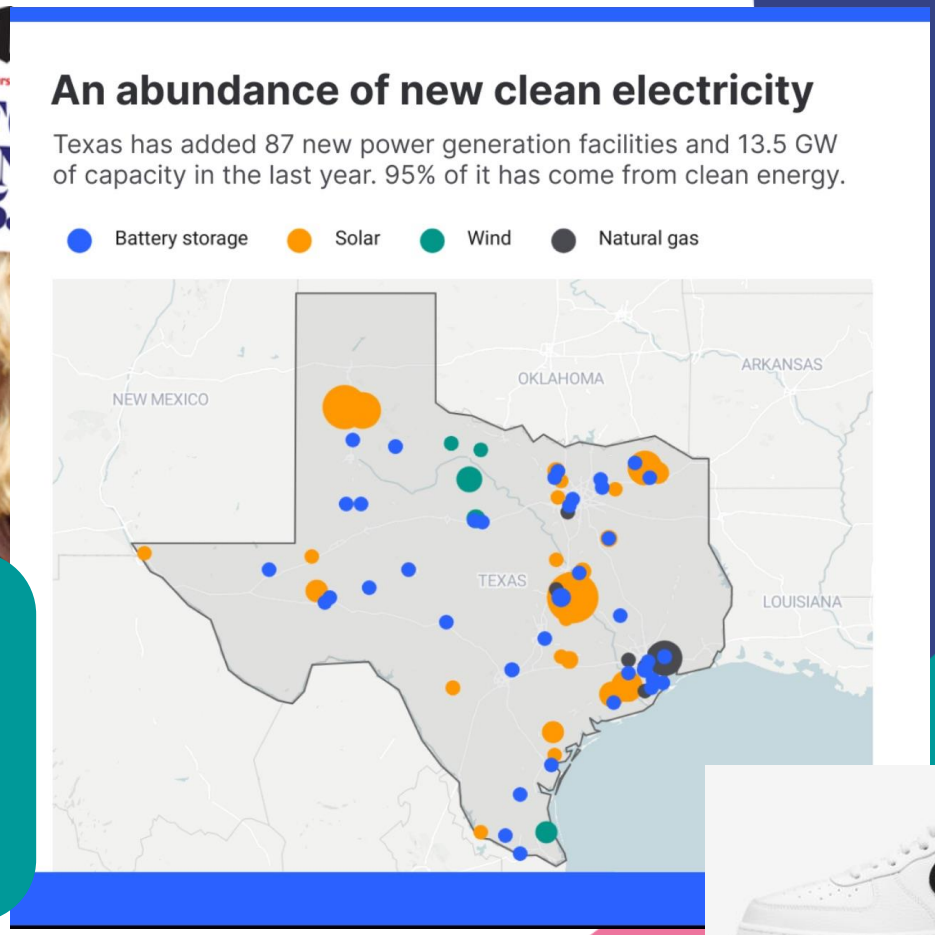
Why it matters



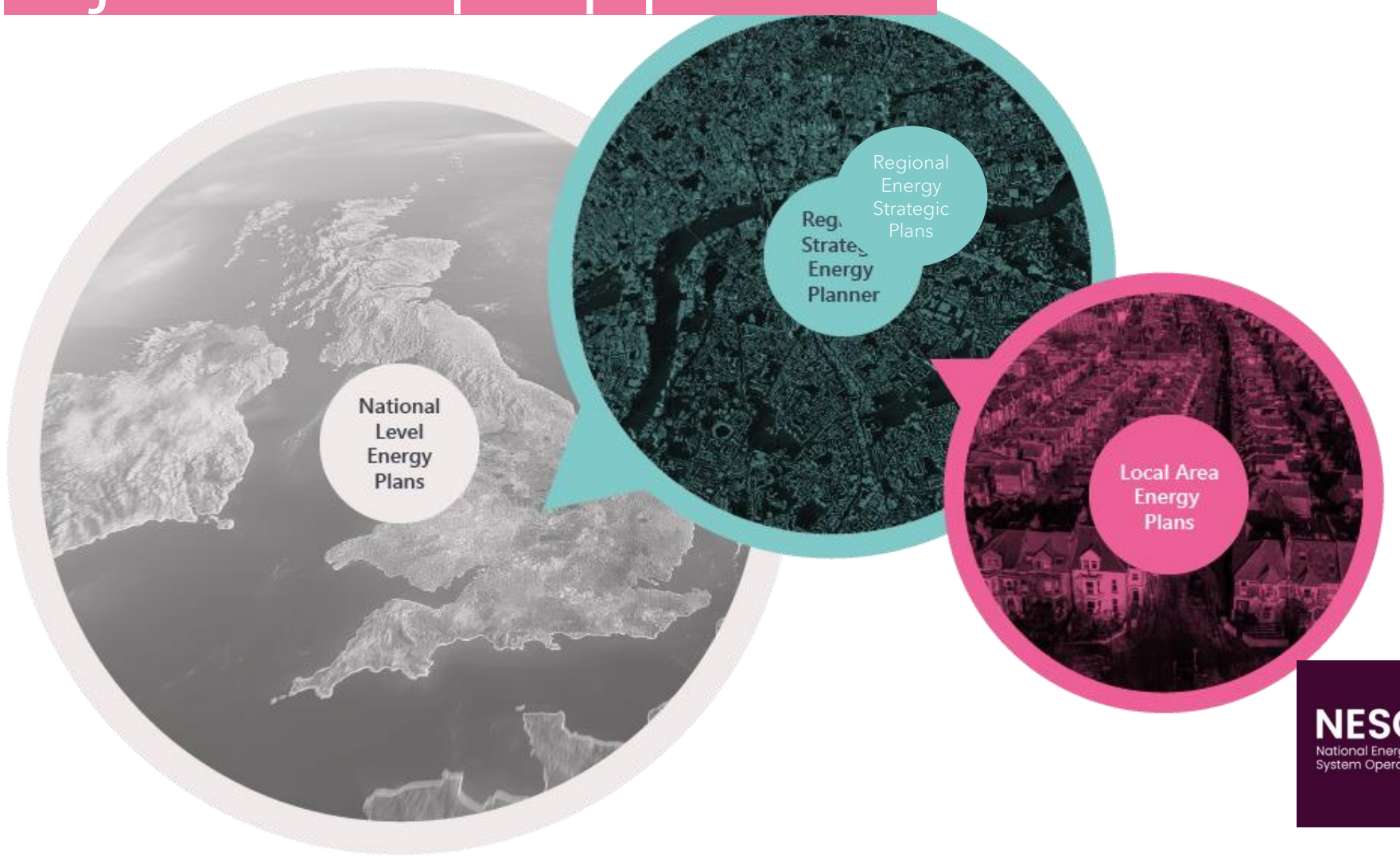
"If Nike were selling Net Zero, they wouldn't say 'buy our expensive trainers so we can hit our sales targets.'" Instead, they'd sell the value, the aspiration, the impact.

Ready for RESP

The creation of Regional Energy Strategic Plans means local needs and priorities will directly influence how energy networks are developed, resulting in a more democratic, low carbon, energy system.

Local Authorities should act now to ensure their strategic priorities are submitted to the NESO so they can inform the transitional Regional Energy Strategic Plan.

A joined-up approach



Providing consistent system-level forecasts and network investment needs that shape the strategic direction of the RESP

Bringing together place-based data and local priorities to ensure the RESP reflects real local needs

This year the priority is the **transitional RESP** but then focus on the longer-term **enduring RESP** due to be published in Late 2027

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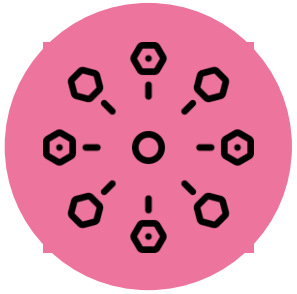
NESOs 6 guiding principles

Place based



Whole-system

Vision led

Proactive

Transparent & collaborative

Fair

Ready for RESP

Five components of a RESP

1

Regional Context

Comprehensive view of regional conditions & priorities

2

Consistent Planning Assumptions

Assumptions to drive consistent derivation of network impacts

3

Strategic Investment Need

Identify needs which are of high economic/ system value and key to regional priorities

4

Pathways

Spatial models of future supply and demand

5

Spatial Context

Geospatial view of pathways against network conditions

t

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Transitional RESP

Dr Anna Stegman

Local Transition Advisor / Ready for RESP programme lead

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Ready for RESP

tRESP overview

What is tRESP?

1. Serves as a transitional bridge to Enduring RESP

2. tRESP will be an input to ED3 and will drive further clarity for Ofgem and networks on the crucial steps needed on the distribution network.

3. Provides each region with a single short-term Pathway (2025-2035)

4. Feeds into multiple long-term Pathways (2035-2050)

Why now?

1. Urgent change: Energy sector transformation and Clean Power 30 demand immediate action

2. Unlocking value sooner: Enduring RESP won't be ready until 2027

3. DNO business planning dates are fixed (2028-2033) and require input now

4. Early stakeholder engagement to integrate regional needs within energy planning

What LAs can and should provide for the tRESP

- A Request for Information (RFI) has been shared to local authorities to complete by 25th July on their strategic investment needs
- Asks for information on:
- Las should focus on:

  Identify relevant colleagues and create internal comms and governance structure to ensure coordinated and comprehensive input and feedback

  - Example projects could be motorway service areas, sustainable aviation fuel manufacture, data centres, freeports, industrial clusters, AI growth zones

  High priority reports/data sources to evidence projects include Local Authority key decisions, such as Cabinet/Full Council/Joint Committee published approvals

- NESO RESP teams able to help advise

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Energy Need Detail
- This sections includes data on year of connection required, value, whether a connection application has already been made, and energy requirements

Regional Significance
- What are the wider benefits associated with this project such as number jobs, and the alignment with current policy

System Value
- What are the energy vectors and needs, will it be flexible, what are social, environmental and economic impacts

Certainty
- Consenting status
- Policy stability
- Technology maturity
- Funding status

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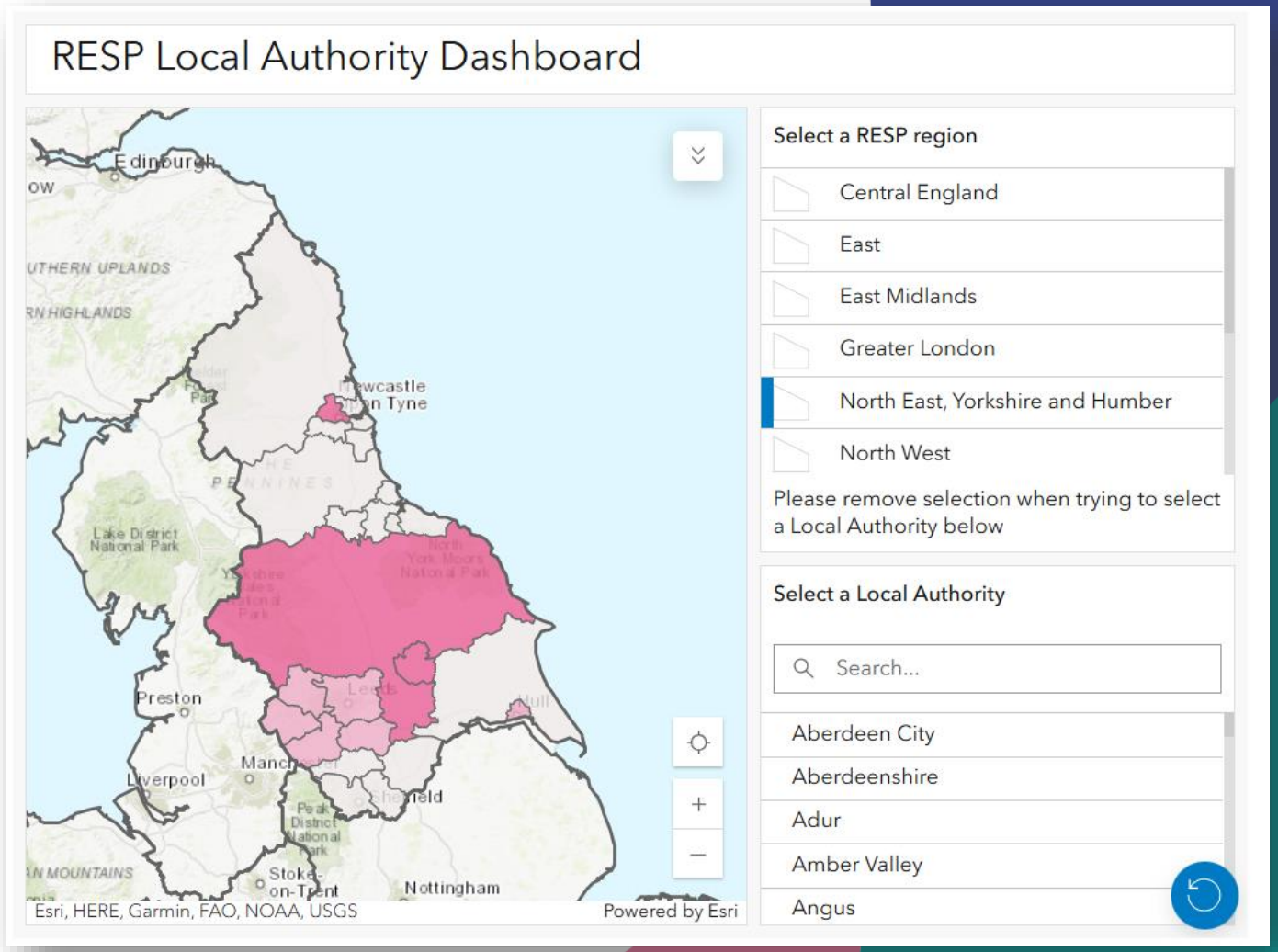
Unsure on your RESP region or DNO?

We have put together an online dashboard to help each local authority see what RESP region they are in and who their main DNO and GNO is and how they can access planning tools and data to help

It also shows areas that have completed (bright pink) or are progressing (light pink) a Local Area Energy Plan (LAEP) to help identify where that data will exist and to what extent each RESP region is covered.



RESP regional contacts and meetings

2 July	RESP Forum - North West	1 – 2:30pm	Online	Register
7 July	RESP Forum - Central England	10:30am – 12:00pm	Online	Register
7 July	RESP Forum - London	2 – 3:30pm	Online	Register
8 July	RESP Forum - West Midlands	1:30 – 3:00pm	Online	Register
8 July	RESP Forum - North East, Yorkshire and Humber	10 – 11:30am	Online	Register
9 July	RESP Forum - South East	10 – 11:30am	Online	Register
9 July	RESP Forum - South West	3 – 4:30pm	Online	Register
10 July	RESP Forum - Wales	10 – 11:30am	Online	Register
10 July	RESP Forum - East Midlands	10:30am – 12:00pm	Online	Register

https://www.neso.energy/news/continue-conversation-future-energy-your-local-area

To contact the RESP Team at NESO: box.RESP@neso.energy

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Who to contact for support on tRESP

For further support, the RESP teams are the key point of contact. If your local authority would like full guidance on Strategic Investments, or would benefit from a tailored briefing, the RESP teams are your key point of contact.

They can provide comprehensive documentation and deliver briefings to senior officers.

- Scotland, Fergus Tickell - Fergus.Tickell@neso.energy
- North West, Tom Worthington – Thomas.Worthington@neso.energy
- North East, Yorkshire and Humber - Thomas.Worthington@neso.energy
- Wales, Huw Lewis (interim) – Huw.Lewis@neso.energy
- West Midlands, Toby Thornton – Toby.Thornton@neso.energy
- East Midlands, Faye Relton (interim) – Faye.Relton@neso.energy
- Central England, Sarah Hassenpflug - Sarah.Hassenpflug@neso.energy
- London, Catherine Bock – Catherine.Bock@neso.energy
- East, Catherine Bock (interim) – Catherine.Bock@neso.energy
- South East, Rhiannon Mundell de Calado – Rhiannon.Calado@neso.energy
- South West, Kieran Highman - Kieran.Highman@neso.energy

Ready for RESP

Why local data is important

Provides a path to Net Zero

Considers what the future system could look like and needs to look like to deliver Net Zero. Rich with local information, and informed by engagement, providing a coherent and costed, best-cost pathway to Net Zero.

Bespoke, detailed, visual

A good plan needs to truly reflect a local areas and its priorities and growth plans. Stakeholder engagement is key combined with visual spatial presentation of building level modelling, which allows exploration of project opportunities in the pathway.

Identifies project portfolios

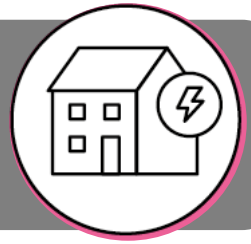
Projects are identified at building level across the whole place and the whole energy system. Areas can understand what ranges of technologies they can deploy, where, in what time frame and at what cost. Enabling investment at scale.

Provides confidence to act

Through whole system scenario analysis, low regret interventions (which are consistent across low-cost scenarios) can be identified. This creates confidence to invest, certainty to act, and a way to priotirise delivery.

Constrained by today's system

Identifies projects based on the current energy system, e.g., network capacity. If future energy system needs are not understood, decisions based on limited data and knowledge. This will not inform a costed pathway to deliver Net Zero in time.



High level modelling

Outputs aggregated at too large a scale, or substation level modelling as opposed to building level, does not identify actionable local projects and is based on lots of assumptions. Will need further work and cost to understand and determine projects.

Siloed project approach

An approach which does not consider the whole system, or focuses on single technologies, This will not enable scaled engagement with investors, will not encompass the whole system to deliver Net Zero, and projects may become stranded assets.

Inefficient investment

Without scenario modelling, projects are identified based on opportunistic characteristics, such as where grid capacity exists for deployment, or simple technical prioritisation. Investment may be spent inefficiently, from both public and private sources.

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QUICK POLL:

- LAEP, LAEP+, DFES, LENZA, Net Zero Data, Cadence….how confident are you in understanding how these tools and approaches are different?

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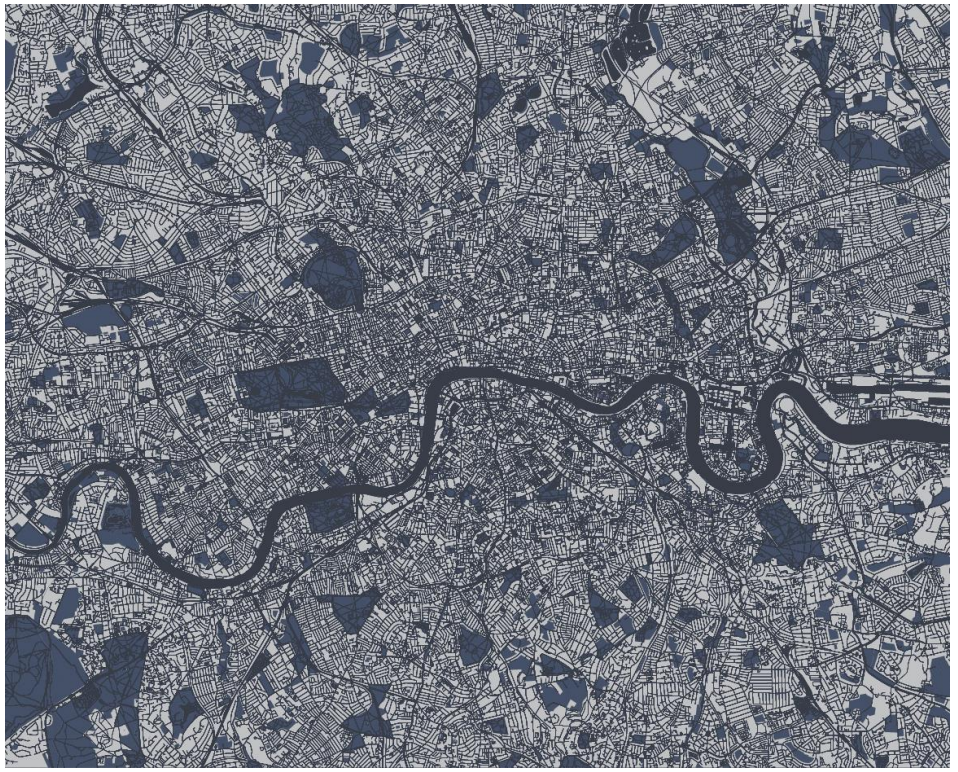
Net Zero Planning



David Lee

Practice Manager - Local Energy Systems Modelling

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Ready for RESP

Datasets

Visualisation Platforms

Models

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Datasets

Ready for RESP

- Input data that helps describe the local area and energy system
  - Feed into an energy plan process
  - Can also be used to help develop projects without needing a full plan

- Output data that helps share the plan with suitable stakeholders
  - E.g. network operators

LAEPs are shaping network investment

DSO | UK Power Networks

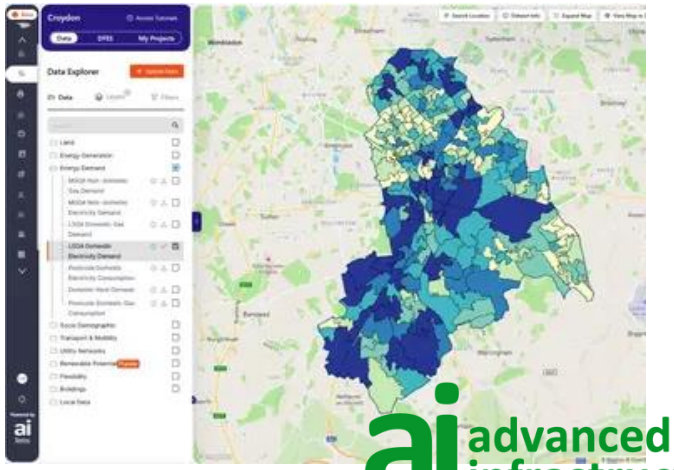
Is LAEP Making a Difference? Yes!

- In both cases users of the data need tools and skills
  - May be as simple as a spreadsheet, but often not

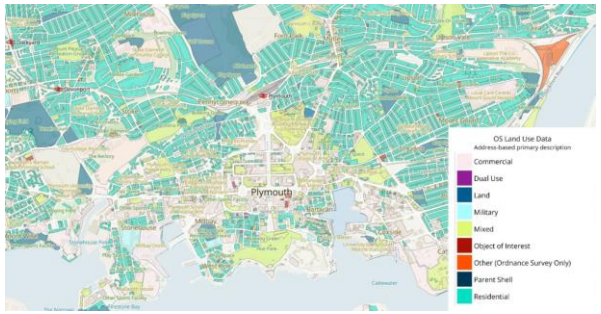
Visualisation Platforms

Ready for RESP

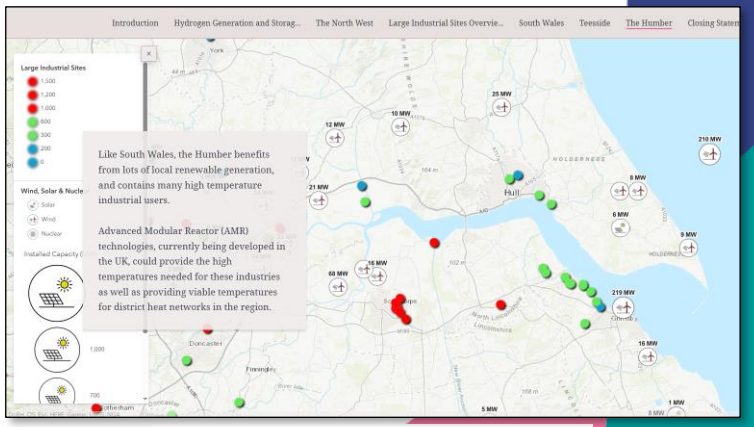
- Presents data in an accessible way – allowing use by wider audience, not requiring extra software or skills.
- Makes it easier to compare and overlay different datasets.
- May allow some basic analysis and small scale modelling – for example understanding the carbon emissions from a small number of buildings.



advanced infrastructure



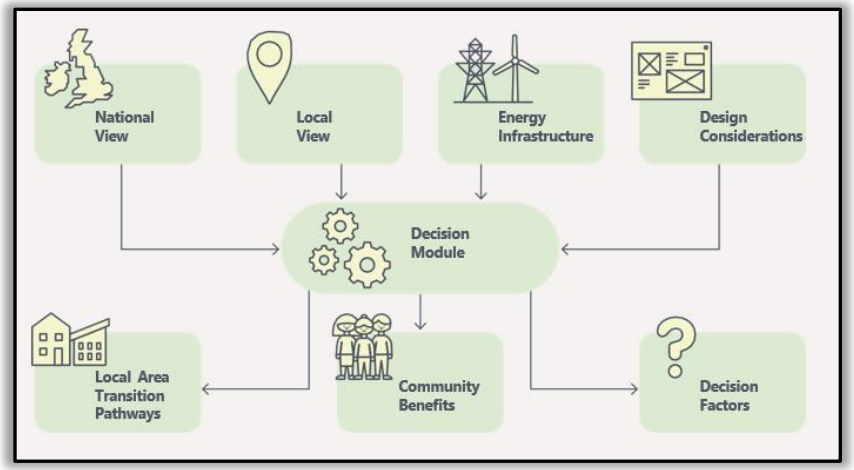
cadence



ArcGIS StoryMaps

Models

- Whole system analysis to better understand the local energy system
- Normally run by expert users as part of a project – not normally designed to be used by local staff
- Variety of different modelling approaches – even when creating some consistency (e.g. across 3 suppliers in Wales)
  - Optimisation
  - Scenario
  - Sensitivity



- Helping to understand what, where and when things need to happen
- View the big picture and understand uncertainty.

Ready for RESP

Datasets

+

Visualisation Platforms

+

Models

=

Highest quality energy plans

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The best energy plans..

1. Use a wide range of relevant **input data** - capturing local specifics when important

2. Put this data into a robust whole systems **model** to create an independent and detailed analysis for an area

3. Provide outputs from this analysis in a **visualisation tool** that can be used by a wider audience.

4. Handing over specific **output datasets** to other relevant parties so they can support implementation e.g. to network operators

Any Questions?

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Renewable storage & generation

Jack Stephenson
Modelling Analyst

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Renewables Data & LAEP Modelling

- Key internal and external datasets:
  - Renewable Energy Planning Database (REPD)
  - Microgeneration Certification Scheme (MCS)
  - Electricity Network Data – (Generation Headroom from DNOs)
  - Large scale renewable land suitability analysis (Wind & Solar PV)
  - Building level rooftop solar PV analysis (Domestic & Non-Domestic)
  - Building level battery storage analysis (Domestic & Non-Domestic)

- Non-technical, spatial datasets:
  - Environmentally related – conservation and protected areas, green belt.
  - Existing infrastructure – buildings and built areas, transport network.
  - Land use – agricultural, sports & leisure.

Building Level Solar PV

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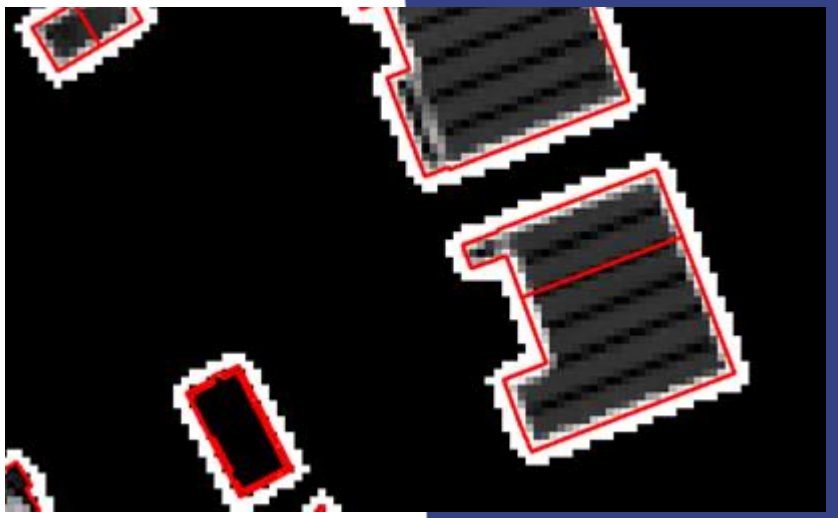
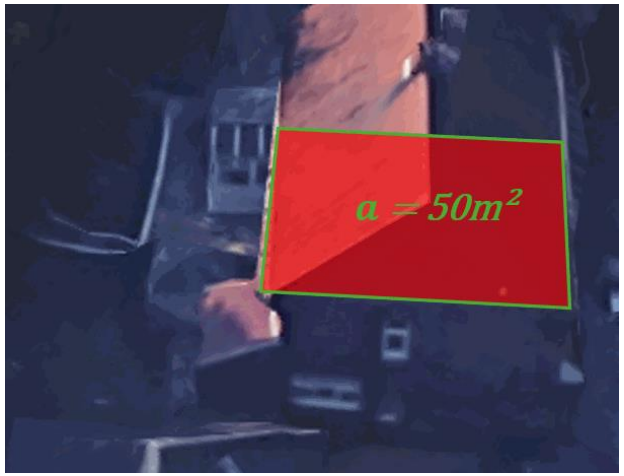
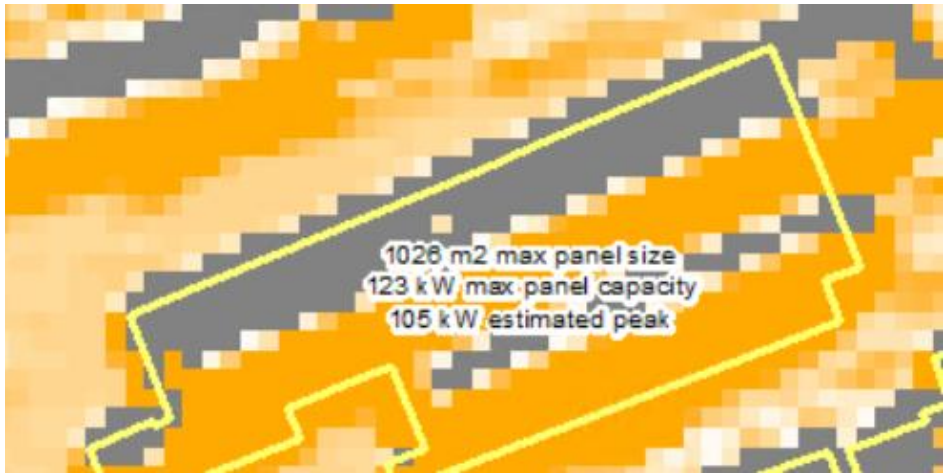
- Rooftop solar PV analysis at building level (domestic and non-domestic)
  - Roof size, orientation, pitch, location, existing panels, building type
- LIDAR data used where available, and most suitable.
  + Identified complex rooves eg. Warehouses with multiple sections.
  + Identify large obstructions.
  – 2m^2 resolution. Works well for large buildings.
  – LIDAR covers ~99% of buildings in England but not national. Excludes rural areas.



Top: Large, non-domestic buildings.
Bottom: Smaller, domestic buildings.





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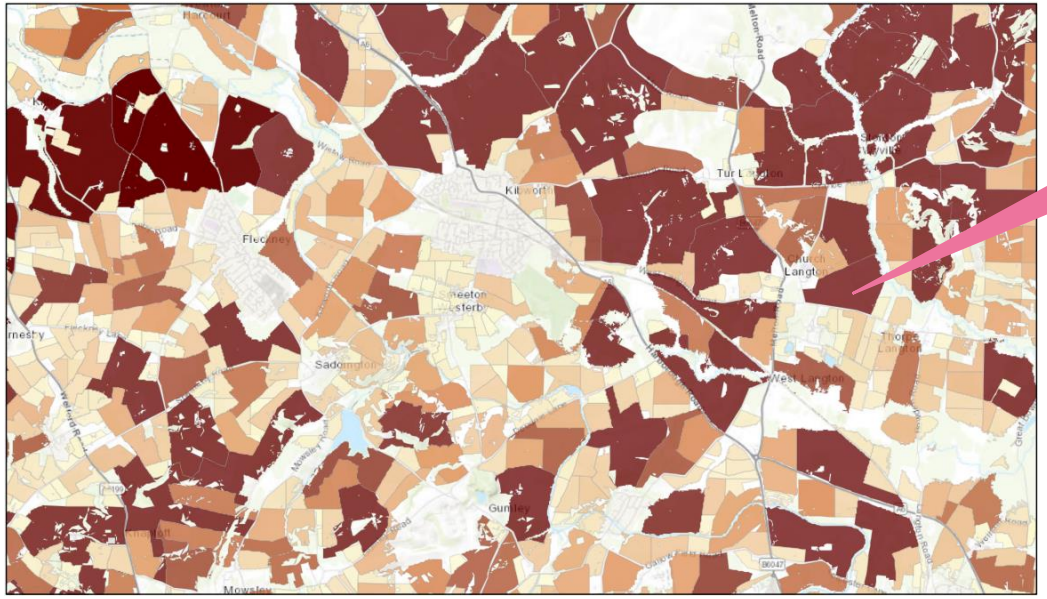
Large Scale Renewables

- Land suitability analysis for large scale wind and solar PV installations modelled GB wide.
- Output: spatial data, grouped (where possible) to Land Registry land parcels, with information of the surrounding area (constraints), and generation estimates.
- Detailed site assessments still required.



Land Registry ID: 29692764

Table | Edit | Get directions | Zoom to

Area (m2)	623317
Number of Turbines	2
Generation (kW)	7,200
Annual Generation (MWh)	17,156
kgCO2e savings per kW - 10yr	30,038,400
Built Area?	Y
Airport?	Y
Green Belt?	
High Value Land Classification?	Y
Nearest substation ID	NGEDBruntingthorpe 33 11kv S Stn
Distance to nearest substation (m)	735
Local Authority	Harborough
Existing sites within 2km	3682 - Operational
Rejected sites within 5 km	
Suitability score	5

Example mapping outputs for large scale renewable sites (*left*) and attributes (*above*).

Large Scale Renewables

- Input data for constraints = national, not local.
- Difficult to include local measures when modelling at scale – planning decisions vary nationwide.
- Constraints are broken into two categories.
  - 'Hard Constraints': Areas unsuitable for renewable development.
    - Built up areas and buildings.
    - Proximity to transport infrastructure.
    - Existing sports and leisure facilities.
    - Military danger areas.
    - High risk flood zones.
  - 'Soft Constraints': Areas to consider during planning, these may not be 'hard no's' in all areas.
    - Electricity network – proximity to substations, generation headroom.
    - Proximity to protected areas (conservation, National Parks etc.).
    - Low risk flood zones.
    - Green belt.
    - High value agricultural land.
    - Proximity to existing and rejected renewable energy sites.

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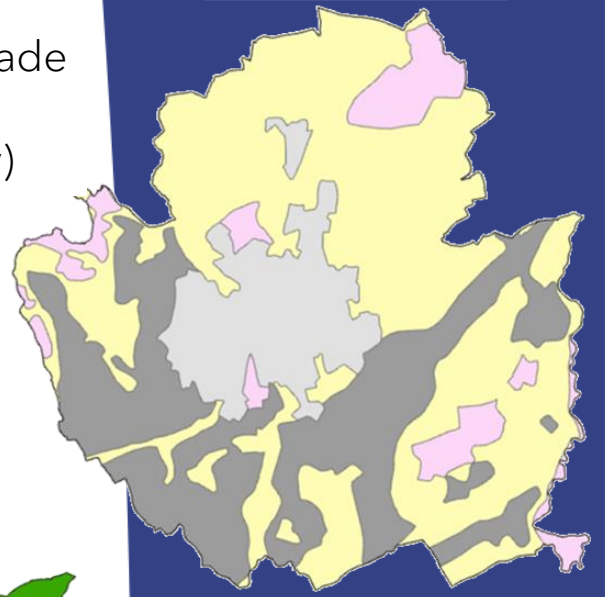
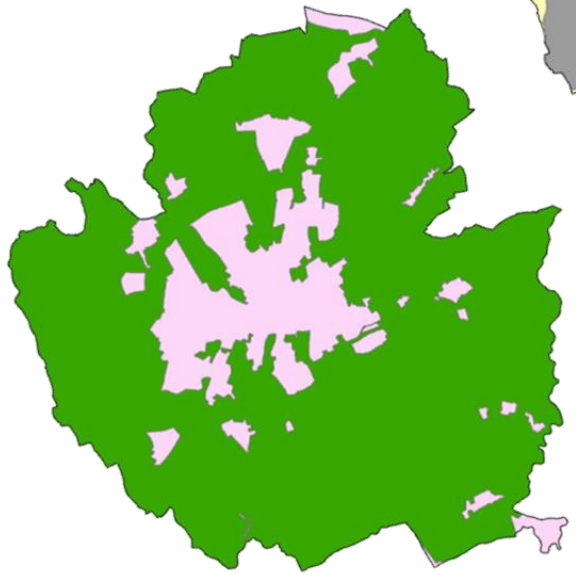
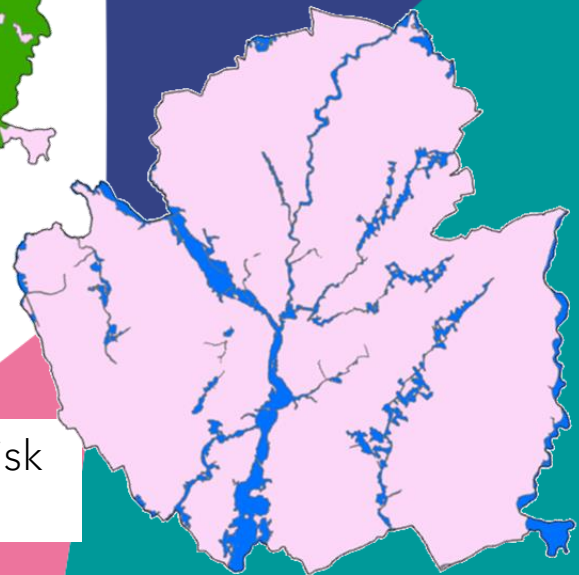
High value land (grade 3: yellow, grade 1&2: dark grey, Urban: light grey)





Green Belt



High flood risk zones

Example Workflow – Large Scale Renewables

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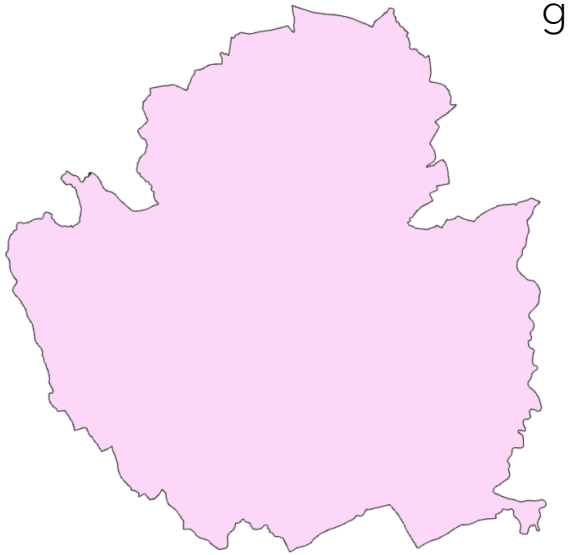
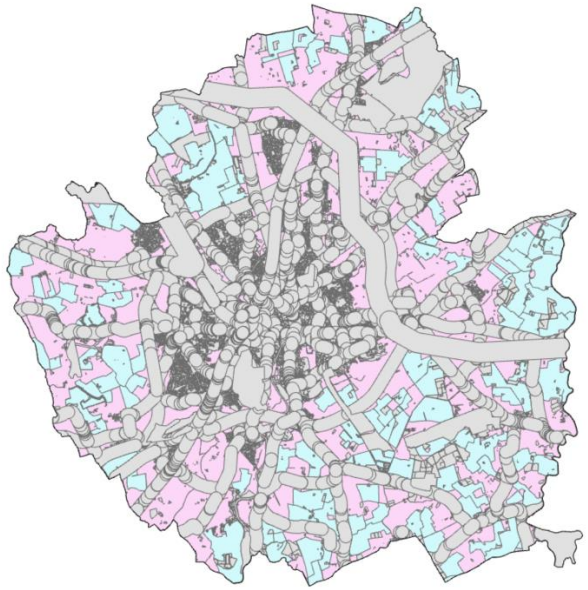
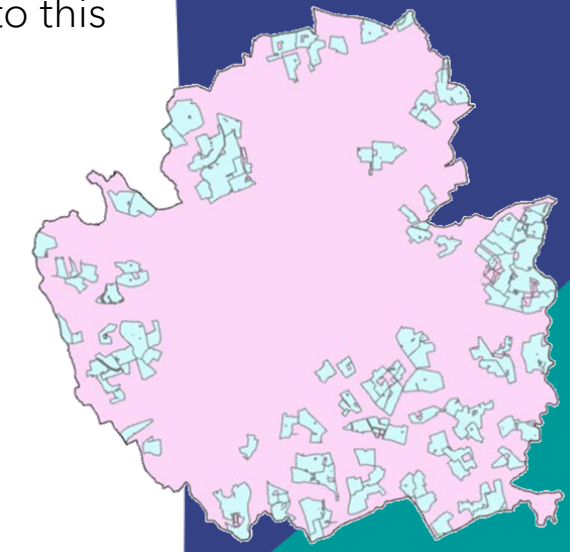
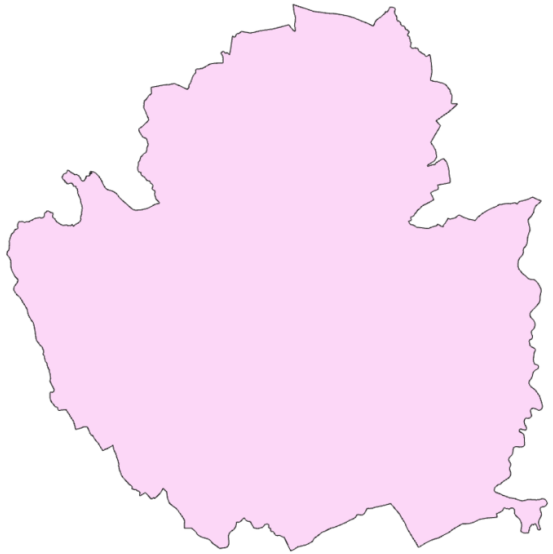
How do we get from this…

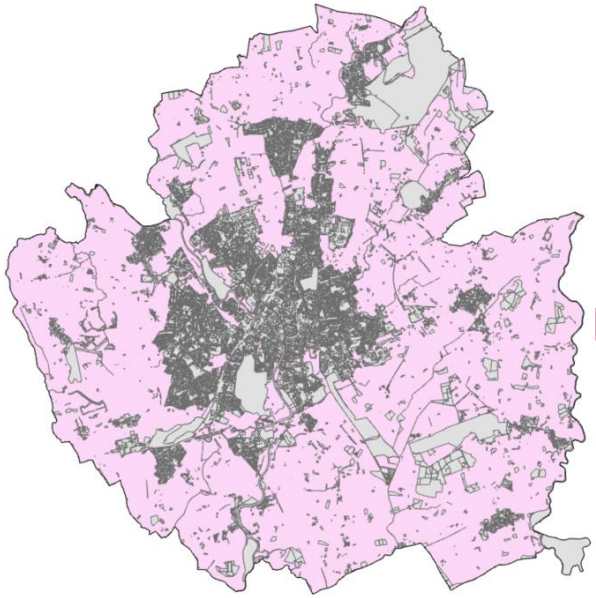


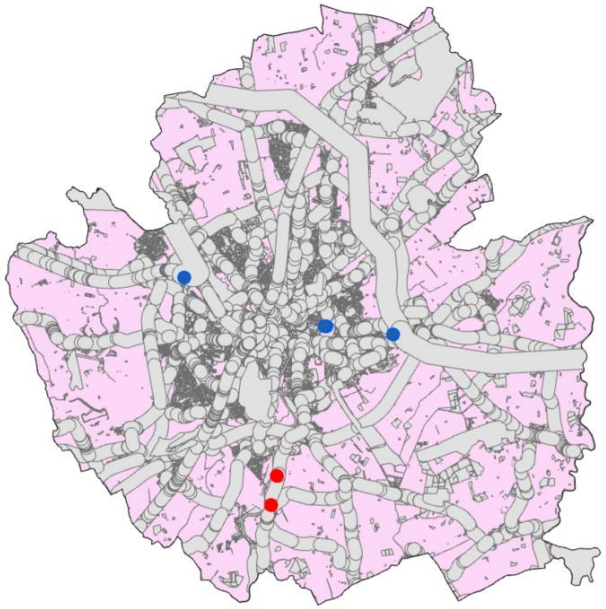


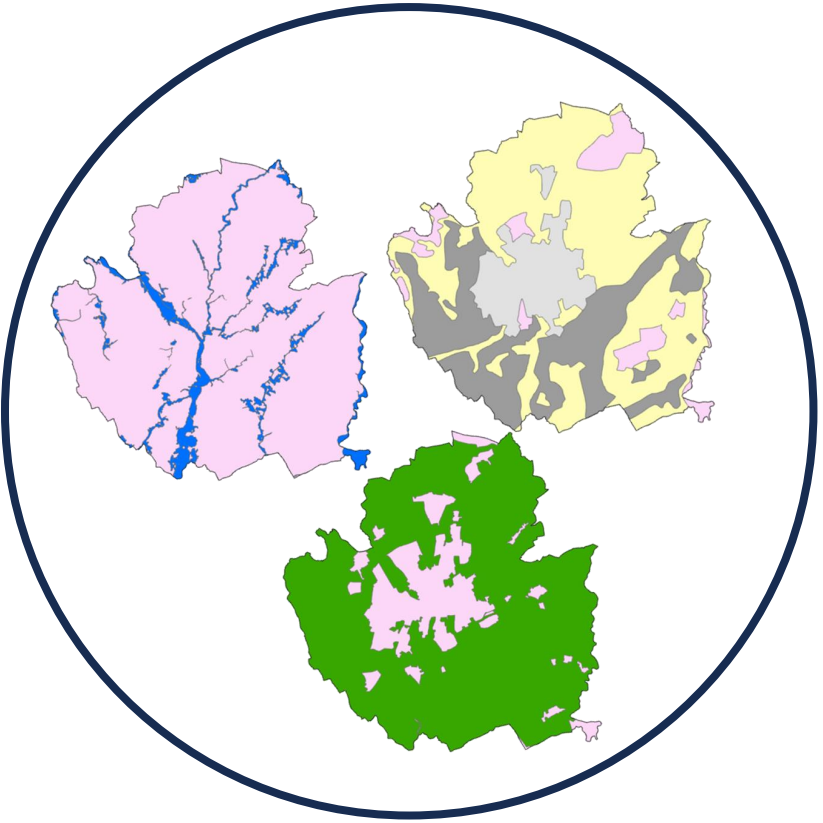
… to this

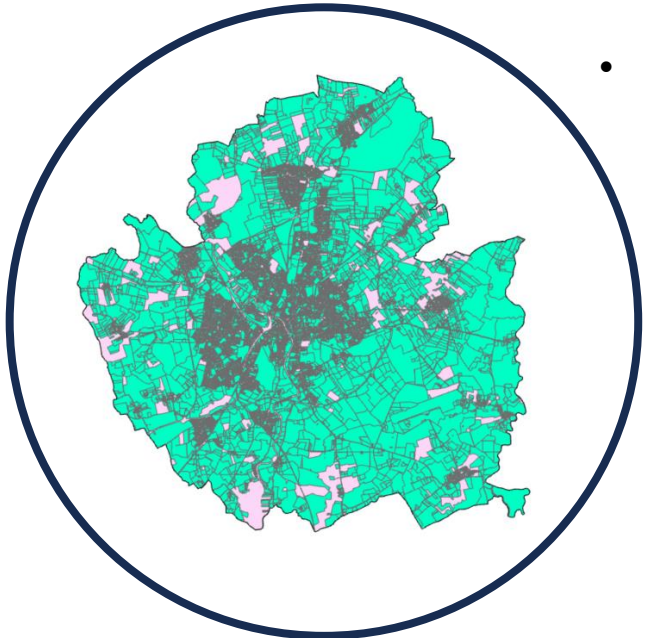






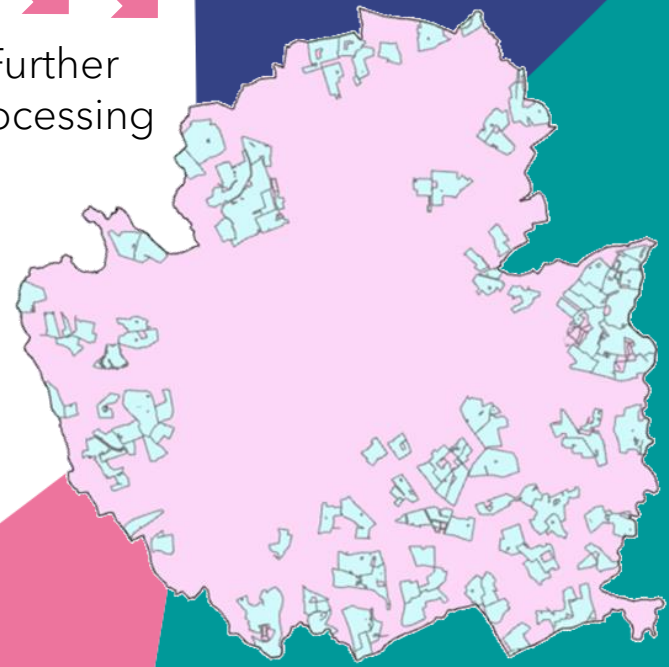






- Land Registry – land parcels
- Joining of ‘soft constraints’
- Site filtering (size)

Further processing



QUICK POLL:

Are there any local factors you would like to see included in this modelling to help with Net Zero planning moving forward?

Storage

- Storage has a role to play alongside generation
- Could be building level (e.g. batteries with domestic solar) or larger grid connected level.
- Local energy plans can consider – for example when looking at how much of domestic solar could be self-consumed.
- **But** the level of modelling required for a local area is not normally the right scale to fully understand the impact of storage – needs detailed energy flow modelling
- Networks are best placed to understand whether increased demands need network reinforcement or flexibility.
  - E.g. UKPN assess this as part of their process for ingesting LAEP data
  - They have tendered for flexibility services as a result of a LAEP

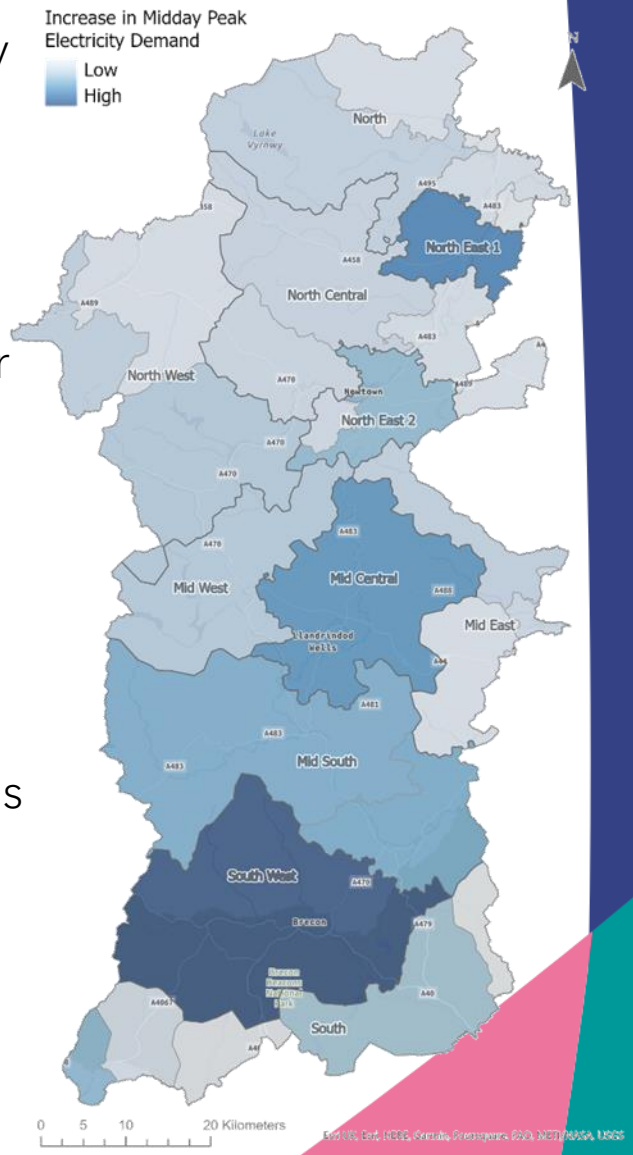
Wider Context

- As well as understanding the capacity of an area to supply energy, it is also important to understand how future demand might change.

- If a plan for an area shows an increase in need for low carbon electricity then this opens up more opportunity for local generation.
  - Matching local demand and supply gives more opportunity for capturing benefits locally
  - May be options like private wire to avoid network impact

- Understanding future requirements also puts current plans in scale.

- Taking the whole system view also should consider trade offs between local generation and taking advantage of more efficient energy sources e.g. offshore wind



Department for Energy Security & Net Zero

Greater South East Net Zero Hub

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north west net zero hub

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Ready for RESP

Any Questions

on RESP, tRESP or LAEP and local data

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Coming up next

- 9th July: Transport
- 19th September: Heat networks
- 25th September: Flexibility and smart local energy systems
- 2nd October: Industrial clusters & hydrogen

Ready for RESP

QUICK POLL:

- How well did todays session meet your expectations ?
- What else would you like to hear in future sessions and how can we improve?

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Thank you

Any questions/comments please email us:
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