INNOVATIVE ZERO CARBON WORKING GROUP

Join us for an introduction to the Smart Energy Systems Cluster

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23 July 2025

Locally-led Innovation Accelerators delivered in partnership with DSIT, Innovate UK and City Regions

sustainability west midlands

Department for Science, Innovation, & Technology

UKRI Innovate UK

West Midlands Combined Authority

INNOVATION ALLIANCE FOR THE WEST MIDLANDS

Welcome from the Chair

Agenda

10:00 Welcome from our Chair | Ian Humphreys, Industrial Synergies Ltd

10:05 The Smart Energy Systems Cluster | Andrew Callard, Energy Systems Catapult

10:30 Smart Heat - Discussion

11:00 Comfort Break

11:10 Elsewhere in the Innovation Alliance |Cliff Dennett Innovation Alliance for the West Midlands

11:15 Smart Homes - Discussion

11:45 Roundtable: collaboration and partnership opportunities

Andrew Callard – Energy Systems Catapult

Cluster Body for the Smart Energy Systems Cluster

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Regional strength and ambition to form a cluster…

Our strong smart energy systems business base is supported by key assets spread across our region with large companies, including utilities, acting as anchors, strong supporting infrastructure underpinning and encouraging activity in the cluster, and a research and innovation asset base driving new ideas and commercial opportunities.

Anchor Companies

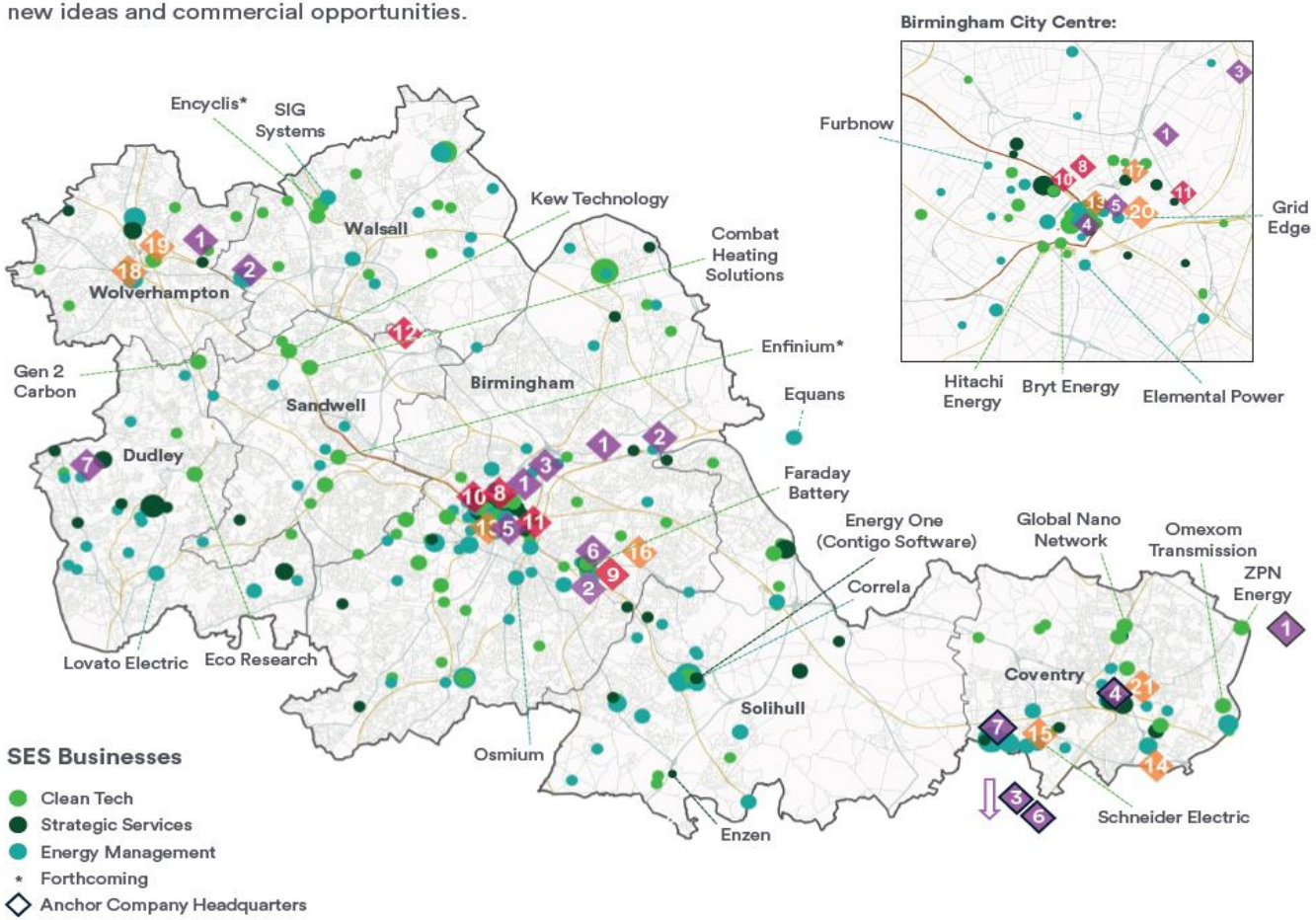
1. Cadent
2. SSE
3. National Grid
4. Octopus
5. Siemens
6. National Gas
7. E.ON Energy Solutions

Supporting Infrastructure

8. Energy Capital
9. Tyseley Energy Park
10. Sustainable Energy Association
11. Sustainability West Midlands
12. Bustleholme Battery Storage

Research and Innovation

13. Energy Systems Catapult
14. UK Battery Industrialisation Centre (UKBIC)
15. Warwick Energy Innovation Centre, University of Warwick
16. Birmingham Energy Innovation Centre & the National Centre for the Decarbonisation of Heat*, UoB
17. Aston Energy and Bioproducts Research Institute (EBRI), Aston
18. Wolverhampton Centre of Engineering Innovation and Research, UoW
19. National Brownfield Institute, UoW
20. Centre for Future Homes, Birmingham City University
21. Centre for E-Mobility and Clean Growth, Coventry University



Note: size of the dots reflects the number of companies at a given postcode

- Strength and breadth in energy systems **innovation organisations and assets.**
- A strong, enabling and supportive **public policy agenda**.
- **Business base and innovators** in smart energy systems sectors.
- A **regional ambition** to be the leading region in this sector.

What have SES been doing after official launch

- **Reviewed cluster best practice** (Governance, visions, growth themes)
- **Stakeholder insight** (2 workshops, 25 interviews, 19 organisations)
- **Innovator engagement** (Initial soundings on barriers to growth)
- **Established a roadmap** (Basis of work from May 25'– March 26')

A cluster vision

Our vision is to establish the West Midlands as the business-led **centre of excellence** for the design and application of smart and flexible energy systems **in the UK by 2030**.

Building on our existing regional expertise, we will support and enable the sustainable **growth of the supply chain**;

working to reduce barriers and exploit opportunities to drive **business growth** and **economic prosperity** and support the **region's transition to Net Zero**.

Four strategic priorities for a cluster roadmap...

Foster a collaborative and competitive ecosystem, through engagement and sharing

Enhance cluster stability and visibility through robust governance and strategic marketing

Further develop and deliver the cluster's strategy for growth

Maximise regional and national innovation opportunities for cluster advancement

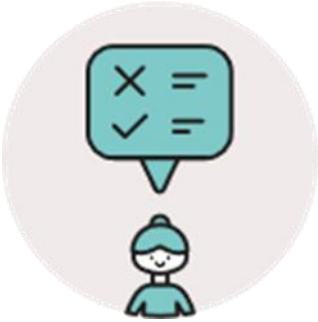
Cluster secretariat:

- Governance
- Membership
- Activity

Distinction between roles as stakeholders and as convenors.

Innovator Challenge Identifying SMEs

- 200-300 organisations may have business activities that fall under the definition of SES in WMCA geographic area.
- Some very significant national players and businesses.
- The hardest to reach are the innovator SMEs, in part because Smart Energy System is not a SIC code.
- Ongoing work with available databases to identify those that fall into the core of the SES definition to then engage:
    - Want to be informed
    - Wish to attend the quarterly meetings
    - Wish to participate in the vertical market/theme groups
    - Wish to be part of the Advisory Board.
- Future work to look at analogous businesses relevant to SES e.g. digital innovators described multiple forms of IT by SIC

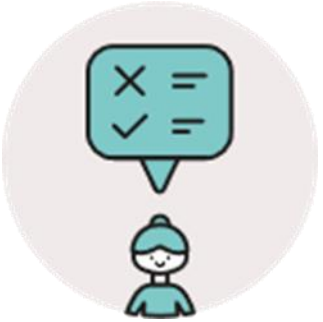


Three initial themes for action

1. Align with public/private investment opportunities e.g. market access and challenge-led innovation

2. Skills and workforce development e.g. pathways to employment to overcome skills gaps

3. Transformational projects e.g. lead national R&D, links to existing or potential projects as testbeds

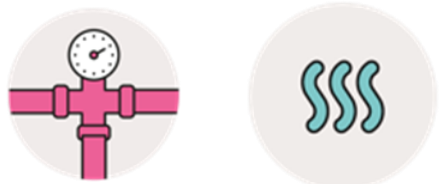


Three initial cluster business groupings

Building on the LCP Delta report and the requirement for tangibility.
"Vertical markets" around which cluster organisations can focus on action.
Initial groupings are:

- **Smart Home**. Interconnectivity between energy systems is key to smart and builds upon the separate sectors such as solar panels, heat pumps, batteries, ev charging etc

- **Smart Heat**. Focus on the challenges and opportunities of district heating systems within the broadest definition for domestic and commercial sites.



- **Smart Business**. This includes not only building control and energy systems for individual premises, but also commercial transport opportunities.

Focused Discussion

Smart Heat

Smart Heat Context

- Heat networks supply heat to end consumers via a series of underground pipes served by any heat source, including renewable heat sources, heat pumps, industrial waste heat or held within water bodies
- Introduction of heat network zoning reduces demand uncertainty by requiring certain types of building to connect to the heat network where a zone is designated.
- Nationally 520+ heat network projects mainly urban and site-wide schemes. Climate Change Commission estimates 18+% of the UK's heat demand will need to be served by heat networks by 2050, c 19% needed in West Midlands, up from 2%.
- DESNZ report identified 41 heat network zones across Birmingham, with a total heat demand of approximately 1,700 GWh pa. The estimated capital expenditure to develop the necessary infrastructure across all zones is around £2.1B.
- Several district heating projects in the West Midlands in the pipeline, with 9 currently under construction and 23 having secured planning permission.

Smart Challenges & Opportunities

Challenges:

- Historically, UK has not adopted district heating as mainstream solution. Traditional heating systems persist despite regulatory incentives.
- Consumer behaviour impacts on acceptance with concepts such as ‘choice’, ‘legal right’ and ‘control’. Mixed housing stock and ownership increase roll-out complexity especially for retrofit.
- The district heating market is highly competitive, with a small number of global players competing for market share.

Opportunities :

- Heat network market is still emerging and lacks track record that investors typically seek. By providing financial support or guarantees, the WMCA could unlock private investment, accelerating growth of heat networks as exemplar region.
- Integrating heat networks into broader regional infrastructure upgrades achieves economies of scale and spreads capital costs across multiple projects. View as an energy systems project not heat in isolation.
- Develop standardised procurement framework to promote local manufacturing and supply chains. Creation of a local integrated market enables future national supply.
- Heat network projects involve many stakeholders with competing interests, making coordination complex. The neutral convener approach is wider than just a SES vertical market to ensure smooth collaboration across local authorities, investors, suppliers, and end users

Comfort Break

Welcome

Cliff Dennett

Director. Innovation Alliance West Midlands

Connect with Cliff Dennett & Innovation Alliance West Midlands on

INNOVATION ALLIANCE

Independent. Inclusive. Impactful.

We help you understand what innovation can do for you and how to make it happen

We help companies and organisations create impactful innovation programmes that deliver inclusive economic and social progress

We do this by developing thriving innovation ecosystems and catalysing pipelines of innovation activity

We help you understand and use the ecosystem

Partners

CreateCentral

midlands aerospace alliance

SUPERTECH

Transport for West Midlands

sustainability west midlands

UNIVERSITY OF WOLVERHAMPTON

wmhtc
West Midlands Health Technologies Cluster

WMG
THE UNIVERSITY OF WARWICK

UNIVERSITY OF BIRMINGHAM | BCRRE

TECH WM

HOW WE DO IT

Innovation networks and newsletters

Act as gateways, drawing in stakeholders and businesses to drive partnerships and collaborative opportunities

The ‘virtual innovation team’ (VIT)

Business facing innovation experts hosted by a range of regional specialist organisations

Pilot projects

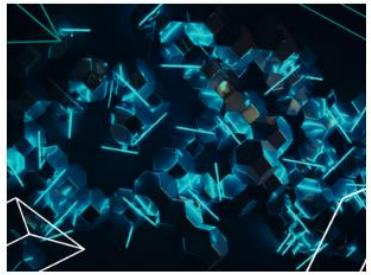
Pipeline of innovation projects providing support across a range of sector areas

AI & FUTURE TECH FORUM

INNOVATIVE HEALTH WORKING GROUP

INNOVATIVE ZERO CARBON WORKING GROUP

INNOVATIVE TRANSPORT WORKING GROUP



CYBER WORKING GROUP

INNOVATIVE MANUFACTURING WORKING GROUP

How to get involved:

- Find out more on IAWM and register for newsletters and networks https://innovationwm.co.uk/

- Follow us on LinkedIn - https://www.linkedin.com/company/innovation-alliance-for-the-west-midlands/

Focused Discussion

Smart Homes

Smart Homes Context

- LCP Delta work narrowed in on the potential of domestic solar. The SES cluster is focused on the potential of Smart Homes incorporating solar, domestic battery, home heating including heat pumps, EV charging and use of EV battery ie the complete home system.

- Domestic solar is a potential anchor stone to Smart Homes for the West Midlands given future energy generation needs. Smart Homes is also about flexible use.

Smart Homes Context

- WM has a leading player in the **residential battery storage** market. Emerging market, robust research ecosystem and skilled workforce.
- The West Midlands are well-positioned to secure a significant share of the growing **BEMS** market, with substantial revenue potential fueled by rising energy efficiency demands and evolving regulations. It splits between commercial and domestic.
- **EV charging** is relatively mature but without a significant domestic presence in the market, the WM opportunity looks limited. Revenues from the sector across the UK are expected to reach £1.3bn in 2030.
- WM benefits from various aspects of the rollout of **domestic solar.** Revenues within the sector could be substantial for the UK, ranging from ~£2bn-£4bn. Potential in WM is material - 2.6 million properties in the WM, with the addition of 215,000 new homes in WMCA area.
- **Domestic heat pumps** cannot be ignored as gas replacements

Smart Homes Challenges & Opportunities

Challenges

- A majority of manufacturers are importing products from China, which does restrict the amount of revenues that can be captured nationally. Applies to batteries and solar panels. Of latter 1/3 of cost to consumer is panel.
- Currently distinct unconnected markets rarely sold as a complete system.

Opportunities

- Alleviating pressure on the grid can be provided by residential solar, batteries, EV to grid - such flexibility is key to the West Midlands.
- Reduction of emissions through renewable generation with 2.6M properties in WM and 215K new homes by 2031.
- Redeployment of the skills base

Accelerating Deep Tech in Energy Flexibility Programme Opportunity

- Designing and proposing a significant innovation support programme.
- Developing a community and pipeline of tools for deep tech and energy innovators and investors.

Enabling **innovator growth** and enacting **systemic changes** to super-charge the development of digital solutions, research, and policy.

Roundtable

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