



South East Midlands  
**ENERGY**  
STRATEGY

# Welcome

**Peter Horrocks CBE**  
**Chair, SEMLEP**

**28<sup>th</sup> February 2019**  
**Vincent Auditorium, Cranfield University**

**SEMLEP**

South East Midlands  
Local Enterprise Partnership



# National View:

Energy police and infrastructure –  
a key component of delivering the  
national Industrial Strategy

Patrick Allcorn  
Head of Energy, BEIS

28<sup>th</sup> February 2019  
Vincent Auditorium, Cranfield University

**SEMLEP**

South East Midlands  
Local Enterprise Partnership



# South East Midlands **ENERGY** STRATEGY

Dr Kerry J Mashford OBE  
CEng FIMechE FICE FIET FRSA  
SEMLEP Board Member



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NATIONAL  
ENERGY  
FOUNDATION

# Key considerations

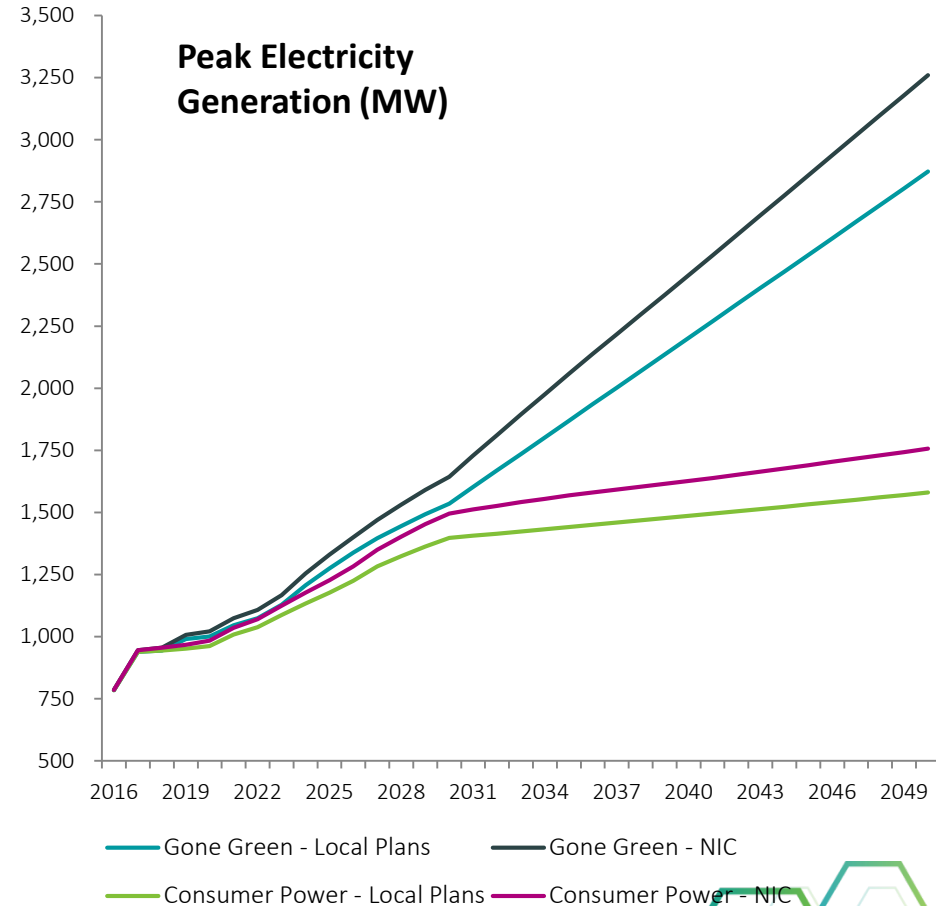
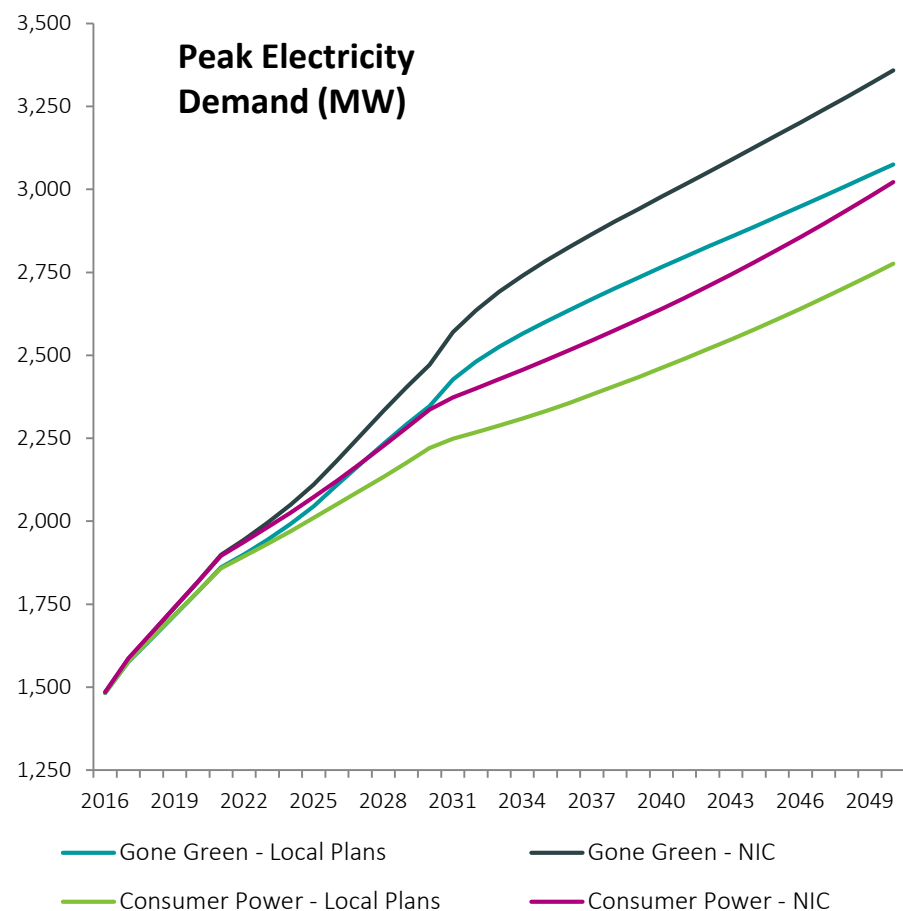
Policy/Driver	
Climate Change Act (2008)	UK committed to reduce CO2 emissions to 80% below 1990 levels by 2050.
Clean growth Strategy (2017)	Businesses energy efficiency and productivity up by at least 20% by 2030. Heat networks and innovation.
Industrial Strategy (2017)	Innovation and research, clean growth in construction, energy, electric vehicle infrastructure, industrial productivity.
Heat Networks (2017)	Heat networks to supply 17% of heat demand in homes and 24% of heat demand in industrial and public sector buildings by 2050 (currently 1%)
Clean Air Strategy (2018)	New fossil fuel powered vehicles outlawed between 2040 and 2050, including diesel trains.
Renewable Energy (2018)	UK target 15% of energy from renewables by 2020 and 32% by 2030.



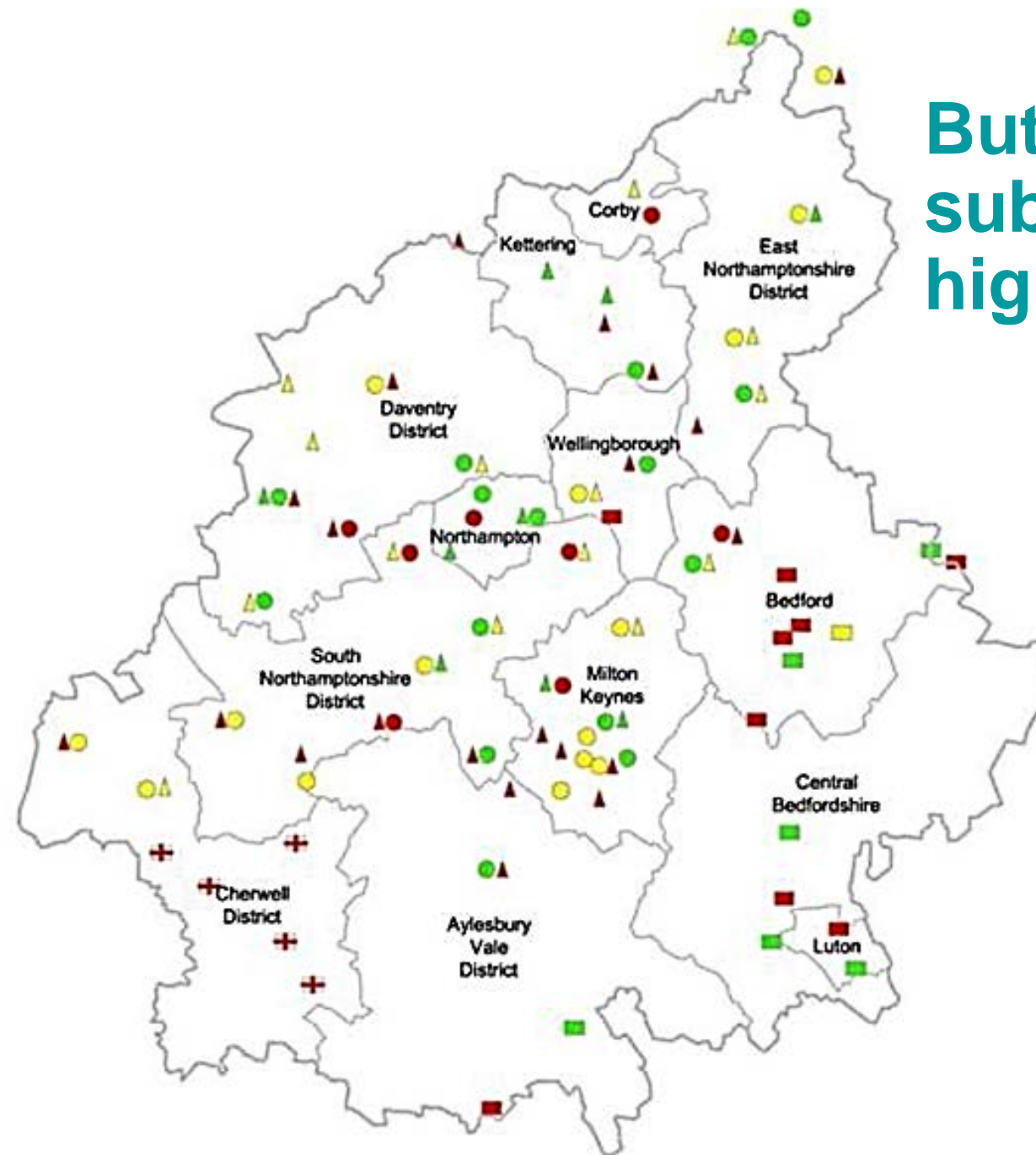
# The SEMLEP Energy Strategy identifies 4 main scenarios

Gone Green Medium Growth	Gone Green High Growth
<ul style="list-style-type: none"><li>▶ High Prosperity – medium growth levels</li><li>▶ Housing growth based on Local Plans projections of approximately 340,000 new units by 2050</li><li>▶ High sustainability ambition</li></ul>	<ul style="list-style-type: none"><li>▶ High Prosperity – high growth levels</li><li>▶ Housing growth based on National Infrastructure Commission (NIC) estimates of 560,000 new units by 2050.</li><li>▶ High sustainability ambition</li></ul>
Consumer Power Medium Growth	Consumer Power High Growth
<ul style="list-style-type: none"><li>▶ High Prosperity – medium growth levels</li><li>▶ Housing growth based on Local Plans projections of approximately 340,000 new units by 2050</li><li>▶ Low sustainability ambition</li></ul>	<ul style="list-style-type: none"><li>▶ High Prosperity – high growth levels</li><li>▶ Housing growth based on NIC estimates of 560,000 new units by 2050.</li><li>▶ Low sustainability ambition</li></ul>

# Peak electricity demand is projected to rise dramatically, due to transformational growth opportunities across the Ox-Cam Arc.



But many local substations are highly constrained



**WPD areas - demand headroom**

- 0 - 2.5 MW
- 2.5 - 5 MW
- 5 - 7.5 MW

**WPD areas - generation headroom**

- ▲ 0 - 2.5 MW
- ▲ 2.5 - 5 MW
- ▲ 5 - 7.5 MW

**UKPN areas (132kV substation) - DG capacity available**

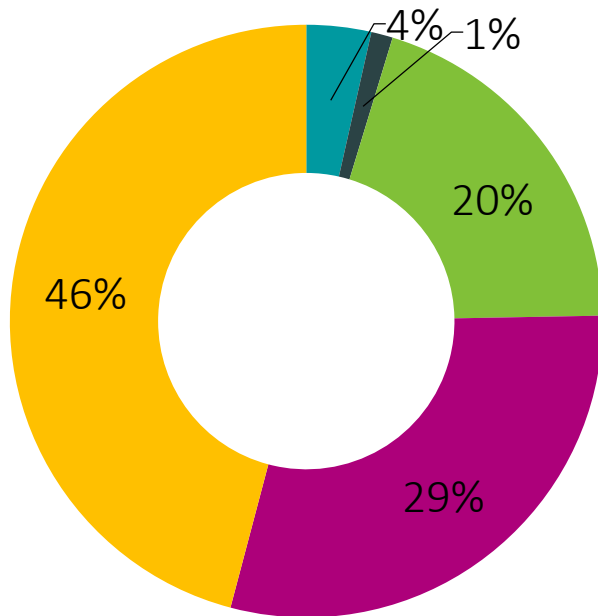
- Limited
- Available
- Significant

**SSEN areas - generation availability**

- ✚ Constrained
- ✚ Unconstrained

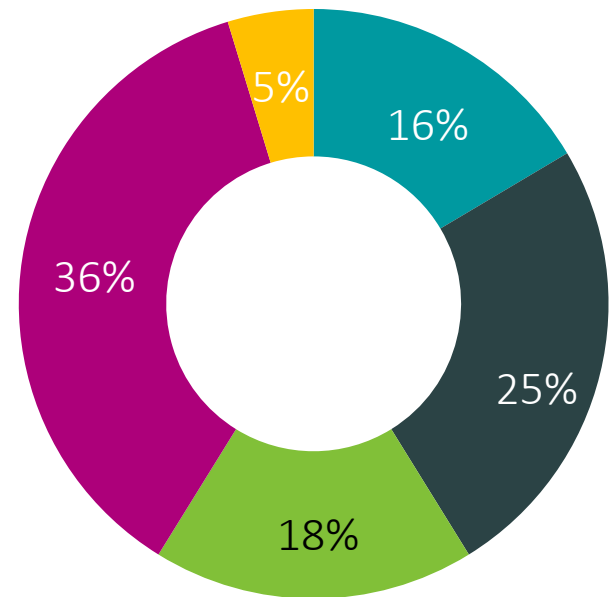
# 5% of substations have little or no demand capacity 16% cannot accept further energy generation connections

Substation electricity demand headroom



■ No capacity ■ 0.1-1 MW ■ 1-5 MW ■ 5-10 MW ■ >10 MW

Substation headroom for distributed generation



■ No capacity ■ 0.1-5 MW ■ 5-10 MW ■ 10-20 MW ■ >20 MW



*Zero Energy Bills Homes,  
Electric Corby (2013)*



# There is potential to reduce demand through energy efficient new builds



*Magna Park,  
Milton Keynes*



*Graven Hill  
site, Bicester*





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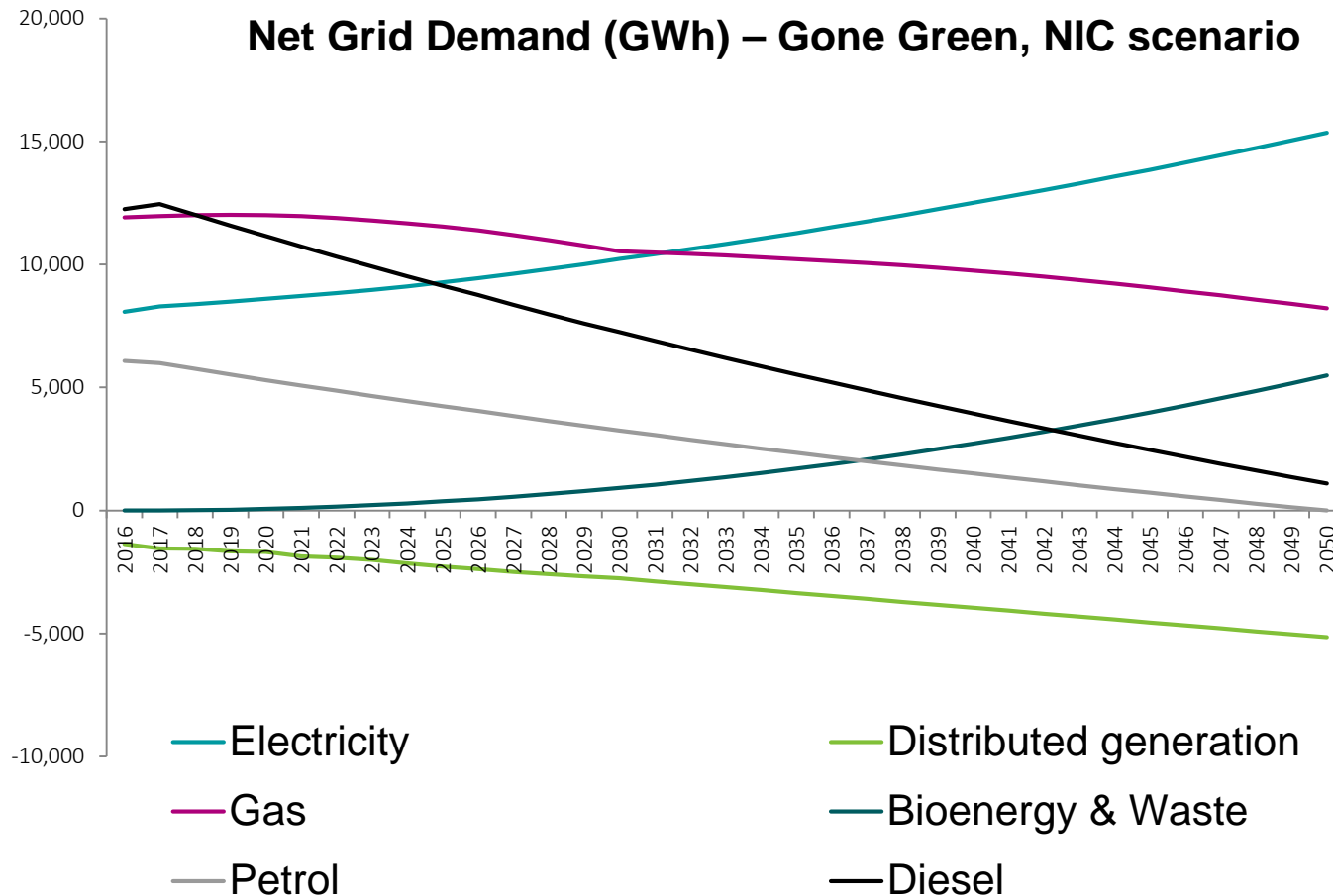
*RENEW Project (ERDF funded) –  
Marsh Farm High-rise block  
regeneration*

[Source: Luton Today, 2018]

**Retro-fitting energy efficiency measures  
to existing buildings is also a priority**

# Local distributed generation can reduce grid demand and augment supply

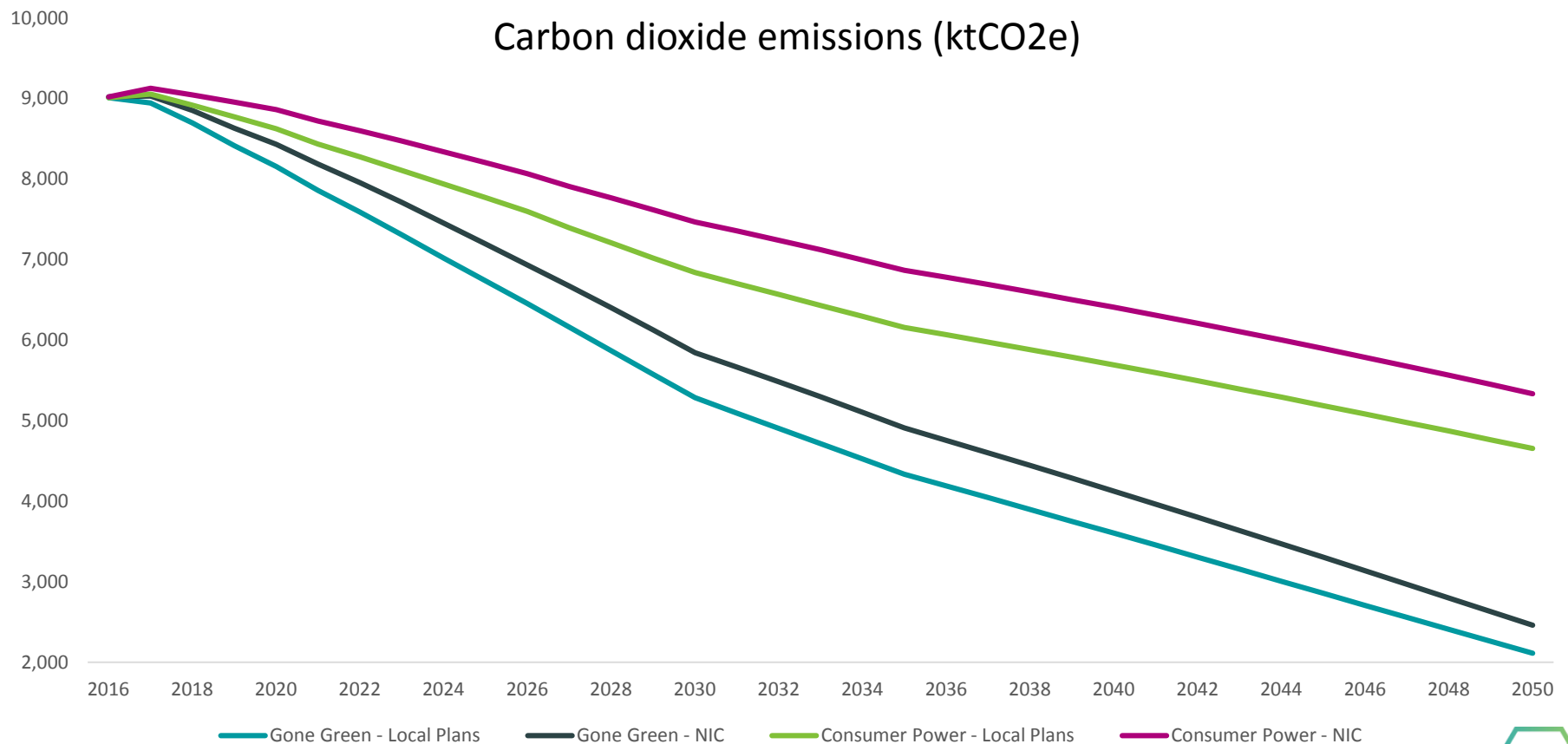
Net Grid Demand (GWh) – Gone Green, NIC scenario



Kettering Energy Park



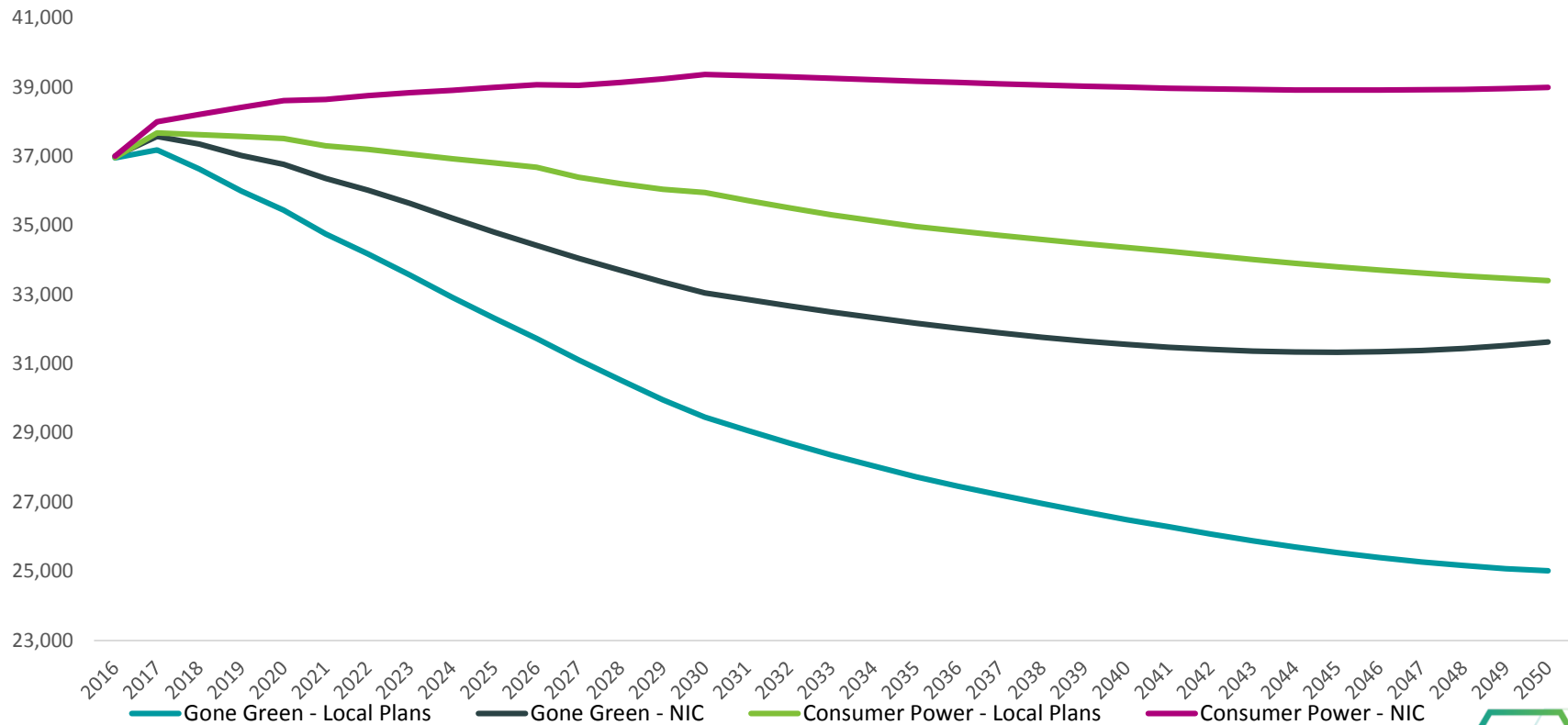
# Outcome 1: Lower CO<sub>2</sub> emissions by 41% - 77%





# Outcome 2: Lower grid energy demand (also improving network balance through ANM)

Energy Use projections (GWh)



# Outcome 3: release capacity for clean growth



*EV Charging, Milton Keynes*

- **Businesses**
- **Housing**
- **Transport**



*Waitrose in Northampton to fuel its entire HGV fleet using Biomethane, supplied through CNG*



*UK Autodrive, Milton Keynes*

# Summary of Recommendations

Challenges	Recommendations
<b>Energy Supply - Capacity and Distributed generation constraints</b>	<p>Support development of Distributed Energy Resources, working with DSOs, domestic and non-domestic developers, and other stakeholders.</p> <ul style="list-style-type: none"> <li>▪ Pilot and establish new commercial framework</li> <li>▪ Potentially revise Local Plans, priorities and develop new guidance.</li> <li>▪ Develop and promote the Business Case.</li> </ul> <p>Arrive at a zonal approach to ANM roll-out (start with areas with local generation).</p> <ul style="list-style-type: none"> <li>▪ Build into new estates / regeneration areas / pilot trials and refine.</li> </ul>
<b>Energy Supply – Low carbon heat networks</b>	<p>Develop area-wide heat network support programme.</p> <ul style="list-style-type: none"> <li>▪ Identify / focus on areas with maximum viability.</li> <li>▪ Develop case studies to support a business case and wider roll-out.</li> </ul>
<b>Energy Demand – energy (and carbon) efficiency of buildings</b>	<p>Agree consistent new build standards and planning requirements across the area.</p> <ul style="list-style-type: none"> <li>▪ Develop a more certain and supportive regulatory framework.</li> <li>▪ Investigate land valuation options to fund higher standards</li> <li>▪ Produce case studies and business incentives for best practice energy efficient homes and buildings, including the use of new electric technologies.</li> </ul>

# Summary of Recommendations

## Transport – Electric vehicles

- Planning Requirements (policy and guidance) to be used to require developers to accommodate EV charging.
- SEMLEP innovation project (Govt. funded) to define routes to engagement (uptake) and impact on infrastructure.
- Develop a support package for businesses to innovate on EV related services. (e.g. new apps for EV charging).
- Support preferential planning for EV parking spaces
- Develop a central repository for case studies and learning

## Transport - Connectivity

- Develop programmes to target road capacity stress points.
- Develop programmes to tackle rail network stress, focused on Thameslink morning peak and PM peak in London Northwestern, in addition to AM peak services to London in both train operators' services.

Support the development of new strategic road and rail links towards Oxford and Cambridge, as well as connections into these.



# Next Steps

- ▶ Work with relevant stakeholders and with the support of the Greater South East Energy Hub to:
  - ▶ Continually update base data and projections
  - ▶ Plan for specific developments
  - ▶ Communicate opportunities.
- ▶ Be cognisant of the granularity across the SEMLEP area and work at all scales.
- ▶ Welcome involvement in demonstrator and scale up opportunities.
- ▶ Start now and create a virtuous cycle.





# **Showcase Project**

Nick Bolton – Co-Founder



Powered by Electric Corby



Innovate UK

## Community Interest Company

Formed with support of **Corby Borough Council** as public / private hybrid

Developing and promoting projects that actively enhance Corby, grow the economy and benefit the community

Establishing Corby as a leading demonstrator location for future sustainable living, working and transportation







South East Midlands  
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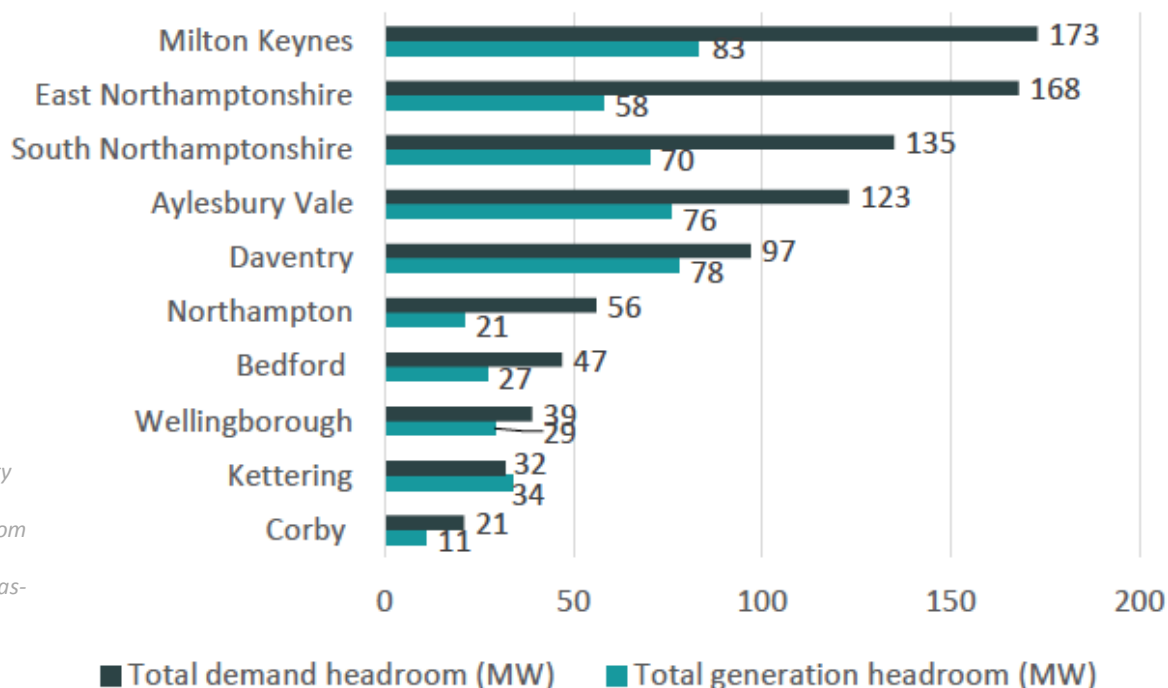


## South East Midlands **ENERGY** STRATEGY

“There is compelling evidence that new buildings are failing to achieve their basic design energy (and carbon) performance targets (with typical performance gaps of 200%).

1. Innovate UK, 2016. *Building Performance Evaluation Programme: Findings from domestic projects Making reality match design*
2. *Building Performance Evaluation meta-analysis. Insights from social housing projects.* National Energy Foundation
3. Zero Carbon Hub, 2014. *Closing the gap between design & as-built performance. Evidence Review Report*

### Energy Constraints





**MIND THE PERFORMANCE GAP**



# **Zero Energy Bill Homes**

Powered by Electric Corby

# Zero Energy Bill Homes

Powered by Electric Corby

To build a regular house with a net zero energy bill, ie. revenue from generation counteracts any energy costs . The project was based on:

- 8 terraced/semi detached 3 bedroom homes adapted to meet modelled ZEB performance
  1. Fabric – thicker walls, more insulation
  2. Energy – PVT electricity generation
- 2 standard unaltered 3 bed homes to act as the standard benchmark
- All 10 homes were fitted with Lightwave RF home automation and monitoring equipment

Sales achieved a **9% price premium**,

Better then normal, but below expected performance due to multiple build quality problems.

**Overall significant learning and experience**



...sold above standard market price



...with Home Automation with monitoring and management built in



**47** Homes consisting of  
**31** houses and  
**16** apartments



# Priors Hall Park









# Fabric First - 4 Wall super SIP

## Performance Enhancement - Maximised U Values for 'Thin Wall' implementation:

- Use of highest grade / lowest Lambda value PU injected foam from BASF - panels injected with 'over packed' insulation ensures lowest U Values and highest strength
- High strength foam core has no 'front to back' connectors - no 'thermal bridging' elements to panel joints or interconnecting elements
- No requirement for additional external or internal insulation to counteract thermal bridging - optimised U Values with minimal wall thickness
- No requirement for external or internal membranes to provide moisture or air permeability control - optimised U Values and Airtightness with minimal wall thickness
- Class leading U Values - **185mm wall panel = 0.15W/m<sup>2</sup>K & 287mm wall panel = 0.09W/m<sup>2</sup>K**
- Class leading airtightness (without tapes or membranes) = **0.855m<sup>3</sup>/h/m<sup>2</sup>**





# The Renewable Energy System – *Energy Positive Living*

“Most successful integrated renewables system” –



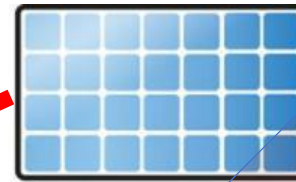
The Earth Energy Bank



Institute of Energy &  
Sustainable Development  
Tested

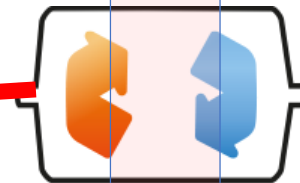


Horizon 2020  
European Union Funding  
for Research & Innovation



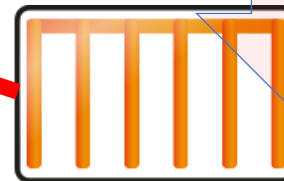
Solar Energy Collection

Rooftop PVT collects  
electrical and thermal  
energy



Ground Source  
Heat Pump

Heat Pump



Solar Energy Storage

Surplus energy heats a  
liquid pumped to  
underground pipes.

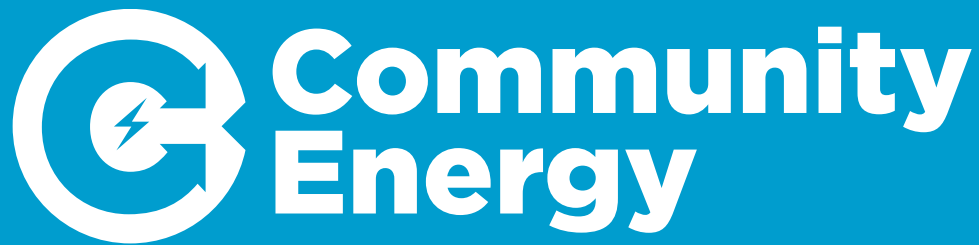
This heat is pumped back to  
the home via a heat pump  
when needed in the winter



# building for 2050



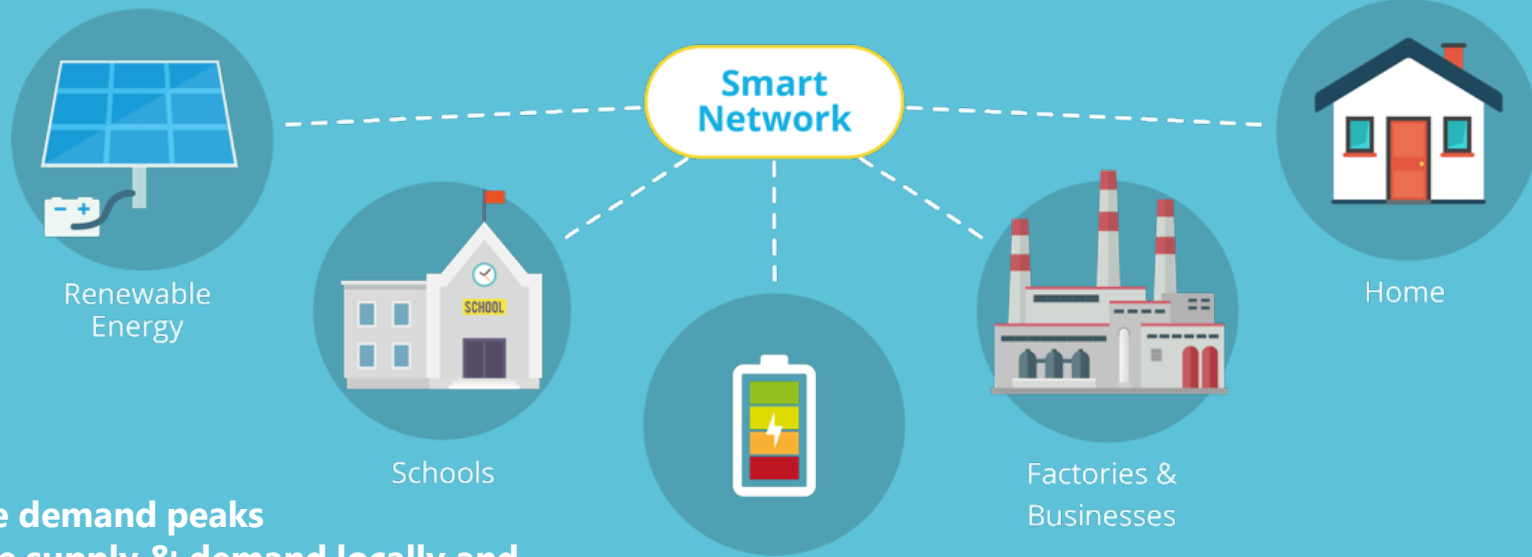
Department for  
Business, Energy  
& Industrial Strategy



People Power



# Connected Community



**Reduce demand peaks**  
**Balance supply & demand locally and**  
**Deliver value for customers**

# Innovate UK

## **Smart local energy systems: concepts and designs**

Supported by

**CATAPULT**  
Energy Systems

[www.YourCommunity.Energy](http://www.YourCommunity.Energy)



**Produce and disseminate case studies and business case for best practice energy efficient homes and buildings, including the use of new electric technologies**

- Energy+ living utilising modular offsite construction system
- Smart energy system at a microgrid level





**Electric  
Corby**

Switched on thinking

**Nick Bolton**

[nick@electriccorby.co.uk](mailto:nick@electriccorby.co.uk)



# Greater South East Energy Hub Delivering Regional Energy Priorities

South East Midlands Energy Strategy Launch  
28<sup>th</sup> February 2019

Maxine Narburgh – Regional Hub Manager



# The GSE Energy Hub

## Objectives

- Increase the number, quality and scale of local energy projects being delivered;
- Raise local awareness of the opportunity for and benefits of local energy investment;
- Enable local areas to attract private and/or public finance for energy projects;
- Identify options for the GSE Energy Hub model to be financially self-sustaining after the first two years.

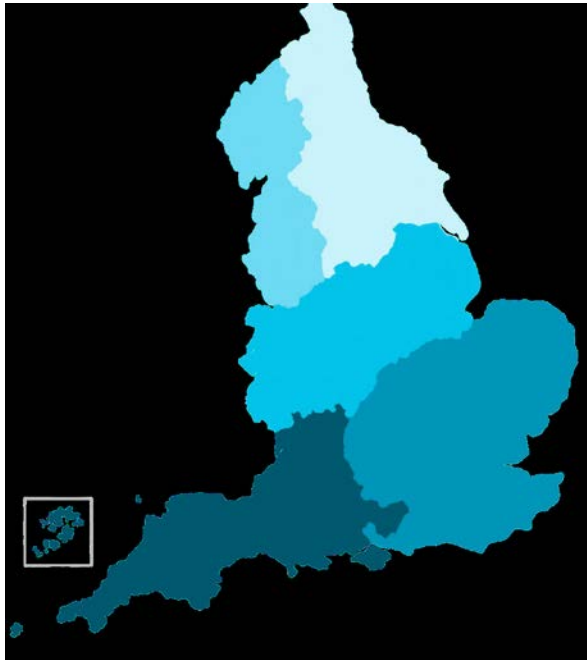
*Working on behalf of all LEP areas and their member LAs*

- BTVLEP - Buckinghamshire Thames Valley Local Enterprise Partnership
  - C2CLEP - Coast to Capital Local Enterprise Partnership
  - CPCA - Cambridgeshire & Peterborough Combined Authority
  - EM3LEP - Enterprise M3 Local Enterprise Partnership
  - GLA - Greater London Authority
  - HERTSLEP - Hertfordshire Local Enterprise Partnership
  - NALEP - New Anglia Local Enterprise Partnership
  - OXLEP - Oxfordshire Local Enterprise Partnership
  - SELEP - South East Local Enterprise Partnership
  - SEMLEP - South East Midlands Local Enterprise Partnership
  - TVBLEP - Thames Valley Berkshire Local Enterprise Partnership
- 📍 Potential staff hosts/hot desks
- Solent LEP in West of England Energy Hub
- ▨ Local Authorities in more than one LEP



# Local Energy Hubs: The National Picture

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- 5 Local Energy Hubs in England
- £4.8m total funding for 2 years
- £9m Rural Community Energy Fund – up to 3 years
- **North West**
- **North East**
- **Midlands**
- **Greater South East**
- **South West**
- Each hub will have a regional lead, energy project managers and access to technical, financial and legal support

# South East Midlands Regional Energy Priorities

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## STRATEGIC ECONOMIC PLAN

Major new house building programme (340,000 – 560,000 by 2050)

Improved transport infrastructure

Business & employment growth

Innovation & 'showcase' sectors

Sustainable, secure energy infrastructure

## KEY ISSUES & CHALLENGES - ENERGY STRATEGY

Capacity supply constraints

Distributed generation constraints

Low carbon heat networks

Energy demand of buildings (efficiency, embedded carbon)

Electrification of transport

Transport connectivity

# Energy Supply Capacity & Distributed Generation Constraints

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## SOLUTIONS

### Clean Growth

Decarbonisation of the power system

Development of distributed energy

### Manage Peak Demand

Active Network Management (smart grids)

Flexibility services (e.g. Piclo)

Demand Side Response

Energy Storage

## GSE HUB ROLE

Identify new business models

Liaise with DNO, OFGEM and other stakeholders

Share case studies and best practice from across the UK

Support business case development & project financing

Communicate policy and/or regulatory barriers to BEIS and other government departments.

# Low Carbon Heat

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## SOLUTIONS

Heat networks – new developments & areas with high load and density

Electrification of heat (rural and urban)

Use of waste industrial heat

Sustainable biofuels

Hydrogen

Plan ahead ~10 year development framework

## GSE HUB ROLE

Support areas to access HNDU feasibility funding

Identify and drive best practice planning policy for new build

Share case studies, business cases and business models

Support access to funding and finance

Expand projects to an integrated whole system approach

# Building Performance

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## SOLUTIONS

Low carbon 'in use' buildings e.g. passivhaus, Enerphit, energiesprong

High quality and carbon standards (planning policy, building regulations)

Buildings regulations -Enforcement of the 'performance gap'

Integrated renewable technologies

Behind the meter solutions

Whole house, energy efficiency retrofit at scale

## GSE HUB ROLE

Support local policy development

Garden towns – models for local energy

Share case studies and best practice from across the UK

Support business case development & project financing

Communicate policy and/or regulatory barriers to BEIS & MHCLG



# Transport: Electrification & Connectivity

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## SOLUTIONS

### Electrification

- Enable EV uptake
- EV charging infrastructure
- Planning policy, highways, procurement

### Connectivity

- Public transport
- Electrification of rail
- Avoid or shift transport activity
- Mobility as a Service

## GSE HUB ROLE

- GSE wide peer2peer network for EV & charging infrastructure
- Liaison with DNOs (networks and data)
- Integration into smart grids
- Regional events
- Shared best practice and lessons learnt
- Case studies
- Business models
- Funding & finance

# The Hub Project Pipeline

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## PROJECT SUPPORT

**Our aim is to develop and resource existing & future local energy projects to be investment ready.**

Energy Project Managers – 121 support with Hub team

Business models, funding and finance options

Case studies, briefing notes, business models and templates for project development

Peer to peer energy networking for collaboration, sharing collateral and assets

Technical support for project development

## OUR PROCESS

Talk to us about your project

Complete an Expression of Interest form for Hub support

The Hub will identify priority projects that can collaborate for mutual benefit

Projects seeking technical support complete 2<sup>nd</sup> stage form

The Hub allocates resource for project support

Projects are added to the pipeline and programme of work

# Contacts

## **Maxine Narburgh**

Regional Hub Manager

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07395 799475

## **Sam Bosson**

Energy Projects Manager – SEMLEP, Herts LEP, CPCA

[sam.bosson@energyhub.org.uk](mailto:sam.bosson@energyhub.org.uk)

07395 799476

## **General Enquiries**

### **Erica Sutton**

Hub Support Coordinator

[erica.sutton@energyhub.org.uk](mailto:erica.sutton@energyhub.org.uk)

07542 226976

# SEMLEP ERDF Funding Opportunities

28<sup>th</sup> February 2019

Sam Bosson – Energy Project Manager,  
Greater South East Energy Hub

**Cranfield University, Bedfordshire**



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# Apologies...

- ▶ Jane Roemer - ESIF Manager for SEMLEP cannot attend due to illness

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**European Union**  
European Regional  
Development Fund



# ERDF Priority Axis and allocations 2019-20

ERDF Priority Axis	March 2019
PA1 Research & Innovation	£5.3m
PA2 ICT	£1.9m
PA3 SME Competitiveness	£6.7m
PA4 Low Carbon	£3.2m
PA6 Green Infrastructure	£455K
<b>Total</b>	<b>£17.55m</b>





# Call Timetable

- ▶ MHCLG have confirmed one further SEMLEP round in MARCH 2019 of £17.55m
- ▶ Any uncommitted funds will be amalgamated into a national call open to all in NOVEMBER...
- ▶ There will be NO calls in 2020



# Useful documents

- ▶ ERDF Operational Programme 2014-20
- ▶ ESIF Programme Guidance 2014-20
- ▶ European Growth Programme: Output definition guidance 2014-20
- ▶ ESIF: Funding Agreements Guidance 2014-20
- ▶ SEMLEP Strategic Economic Plan
- ▶ SEMLEP ESIF Implementation Plan 2017-20



# ERDF Key Principles

- ▶ Minimum project size is £500k ERDF (therefore £1m gross)
- ▶ 50% match funding includes staff time, SME contributions, delivery partners, donated land no more than 10%, buildings (present value), bank loans, capital/revenue match funding
- ▶ BREEAM rating of 'excellent' for new build and 'very good' for refurb.



# ERDF Key Principles

- ▶ Sustainable Development and Equality Principles
- ▶ Added value, 'good value for money' and alignment with domestic priorities
- ▶ Simplified cost options for indirect costs
- ▶ Must be able to cashflow for up to 6 months
- ▶ Procurement policy (legal advice)
- ▶ State Aid (legal advice)



# SEMLEP: ERDF Priority Axis 1

## Research and Innovation

1b Promoting business investment in research and innovation

- Specific Objectives: SMEs invest more in research and innovation in sectors / technologies linked to Smart Specialisation Strategy for England



# SEMLEP: ERDF Priority Axis 2

## Enhancing Access to ICT

2b Developing Information & communications technology products and services, e-commerce, and enhancing demand for ICT

- Specific Objectives: Increase the number of small and medium sized enterprises making productive use of digital technologies





# SEMLEP: ERDF Priority Axis 3

## SME COMPETITIVENESS

3a Promoting Entrepreneurship (new idea, new firms, business incubators)

- Specific Objective: increase entrepreneurship particularly in areas with low levels and amongst underrepresented groups



# SEMLEP: ERDF Priority Axis 3

## SME COMPETITIVENESS

3c Supporting the creation and extension of advanced capacities for products, services and development

- Specific Objective: Increase the growth capacity of SMEs



# SEMLEP: ERDF Priority Axis 3

## SME COMPETITIVENESS

3d Supporting the capacity and the extension of advanced capacities for products, services & development

- Specific objectives: Increase the growth capacity of SMEs



# SEMLEP: ERDF Priority Axis 4 LOW CARBON

4a. Promoting the production and distribution of energy derived from renewable sources

- Specific objectives: to increase the number of small scale renewable energy schemes in England



# SEMLEP: ERDF Priority Axis 4

## LOW CARBON

4b. Promoting energy efficiency and renewable energy use in enterprises

- Specific objectives: to increase energy efficiency in particular in SMEs, including through the implementation of low carbon technologies



# SEMLEP: ERDF Priority Axis 4

## LOW CARBON

4c. Supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings, and in the housing sector

- Specific objectives: Increase energy efficiency in homes and public buildings, including through the implementation of low carbon technologies







# SEMLEP: ERDF Priority Axis 4 LOW CARBON

4e. Promoting low-carbon strategies particularly for urban areas, including the promotion of sustainable multimodal urban mobility and mitigation-relevant adaptational measures

- Specific objectives: Increase implementation of whole place low carbon solutions and decentralised energy measures



# SEMLEP: ERDF Priority Axis 6

## Green Infrastructure

6d Protecting and restoring biodiversity and soil and promoting ecosystem services, including through Natura 2000, and green infrastructure

- Specific Objectives: Investments in green & blue infrastructure and actions that support the provision of ecosystem services on which businesses and communities depend to increase local natural capital and support sustainable economic growth



# SEMLEP: ERDF Priority Axis 6

## Green Infrastructure

6f Promoting innovative technologies to improve environmental protection & resource efficiency in the waste or water sector, & in regard to soil, or to reduce air pollution

- ▶ Specific Objectives: Investment to promote the development & uptake of innovative technologies, in particular in resource efficiency, in order to increase the resilience and environmental and economic performance of businesses and communities.



# Useful links

- ▶ **ERDF Operational Programme**  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/453888/England\\_ERDF\\_operational\\_programme\\_FINAL\\_140815.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/453888/England_ERDF_operational_programme_FINAL_140815.pdf)
- ▶ **Programme Guidance (eligibility, publicity, procurement, revenue, state aid, document retention, performance, fraud, conflict of interest, timesheets)**  
<https://www.gov.uk/government/publications/european-structural-and-investment-funds-programme-guidance>
- ▶ **Output definition guidance**  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/577016/ESIF-GN-1-002\\_ERDF\\_Output\\_Indicators\\_Definition\\_Guidance\\_v3.docx](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/577016/ESIF-GN-1-002_ERDF_Output_Indicators_Definition_Guidance_v3.docx)
- ▶ **Funding Agreements** <https://www.gov.uk/government/publications/european-structural-and-investment-funds-funding-agreements>
- ▶ **Strategic Economic Plan and ERDF Impact Brochure can be found:**  
<https://www.semlep.com/resource-hub/key-publications/>



# SEMLEP ERDF

Thank you for listening

WE WILL BE HAPPY TO ANSWER ANY  
QUESTIONS DURING THE WORKSHOP



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# ERDF Project RENEW



**European Union**  
European Regional  
Development Fund

**Sue Davies**

**Strategic Energy  
Manager  
Luton Council**



# ERDF Priority Axis 4: Supporting the Shift towards a Low Carbon Economy

**£3,000,000 match funded project  
to increase the energy efficiency of  
public sector housing stock**



**LOWER CARBON FOOTPRINT**



**LOWER UTILITY COSTS FOR RESIDENTS**



# Project Aims



To find low carbon solutions for 224 homes which would improve the fabric and core building services and provide a whole building energy solution. Establish a “fabric first” focus

# Project Outputs

- Saving of 1000kg of CO<sub>2</sub> /flat/year
- Financial saving to help alleviate fuel poverty – presently residents pay around £700 per year – savings from lower utility bills



# Project RENEW



10 blocks of flats,  
built in 1960s

Each block with  
112 flats

Project RENEW to  
renovate 2 blocks  
= 224 flats



# Low Carbon Solutions: In each flat

## Heat recovery system

Ensures humidity levels are controlled while the heat recovery system recovers up to 75% of the heat



**envirovent.**  
**heatSava**  
User Guide for Resident

**Lifetime Range®**

The heatSava is an intelligent through the wall single room heat recovery unit ideal for bathrooms, kitchens, WC's and utility rooms achieving up to 75% efficiency.

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### Features & Benefits

- ✓ Improves indoor air quality, reducing condensation and mould problems
- ✓ Saves energy costs – the heat exchange cell recovers up to 75% of the heat that would normally be extracted out to atmosphere
- ✓ Easy to clean and maintain with the innovative plug out/plug in central cartridge
- ✓ heatSava thinks for itself with Intellitrac® Technology, meaning that no user intervention is required
- ✓ Summer mode to stop warm air entering the room on warmer days
- ✓ Frost protection to prevent the cell from damage during the winter
- ✓ Part of the EnviroVent Lifetime Range® designed with recyclable components
- ✓ Made in the UK
- ✓ 5 year renewable warranty



### Control Options

**Intellitrac® Technology**  
The heatSava has been engineered with Intellitrac® Technology to think for itself, meaning that you don't need to press any buttons or light switches to turn it on. When the heatSava senses a rise in humidity, caused by increased moisture generation such as through cooking or showering, the extract and supply airflows will slowly begin to increase in direct proportion to the increase in humidity. It will then automatically track back down again when humidity falls. This controls condensation quietly and efficiently.

**Pullcord**  
The heatSava comes complete with a pull cord to activate the boost for odour control if required. Pull once to activate the boost and once to deactivate.

**Summer Mode**  
During warmer days, the heatSava prevents warm air from entering the room and switches to provide extract ventilation only. As the temperature falls it automatically returns to heat recovery mode.

**Frost Protection**  
The heatSava has an automatic built-in frost protection mechanism to prevent any damage to the heat exchange cell in cold conditions.

**Wireless Controller (Optional)**  
The unit can be supplied with an optional wireless controller to change the airflow speed - trickle or boost. It also indicates when the unit is in a specific mode (i.e. bypass, frost or humidity).

# Low Carbon Solutions: In each flat

All bulbs replaced with LED  
resulting in electricity savings  
of around 75% as well as  
having a life up to 25 times  
longer.



# Low Carbon Solutions: Communal Areas

PV arrays to supply communal areas





# Low Carbon Solutions: Communal Areas

Battery storage to compliment PV





# Low Carbon Solutions: Building Fabric

Retrofit external insulation consisting of an external fascia and Rockwool insulation to wrap the original concrete structure



# Tenant Engagement



# Tenant Engagement

Access to properties to install new lighting, heat exchangers and extensions to boiler flues was key

A programme of events for local residents was organised to inform tenants of the planned works and to introduce them to their tenant liaison officers





# Coping with the unexpected

The tragedy of the Grenfell Tower fire coincided with the planned start date for the project.

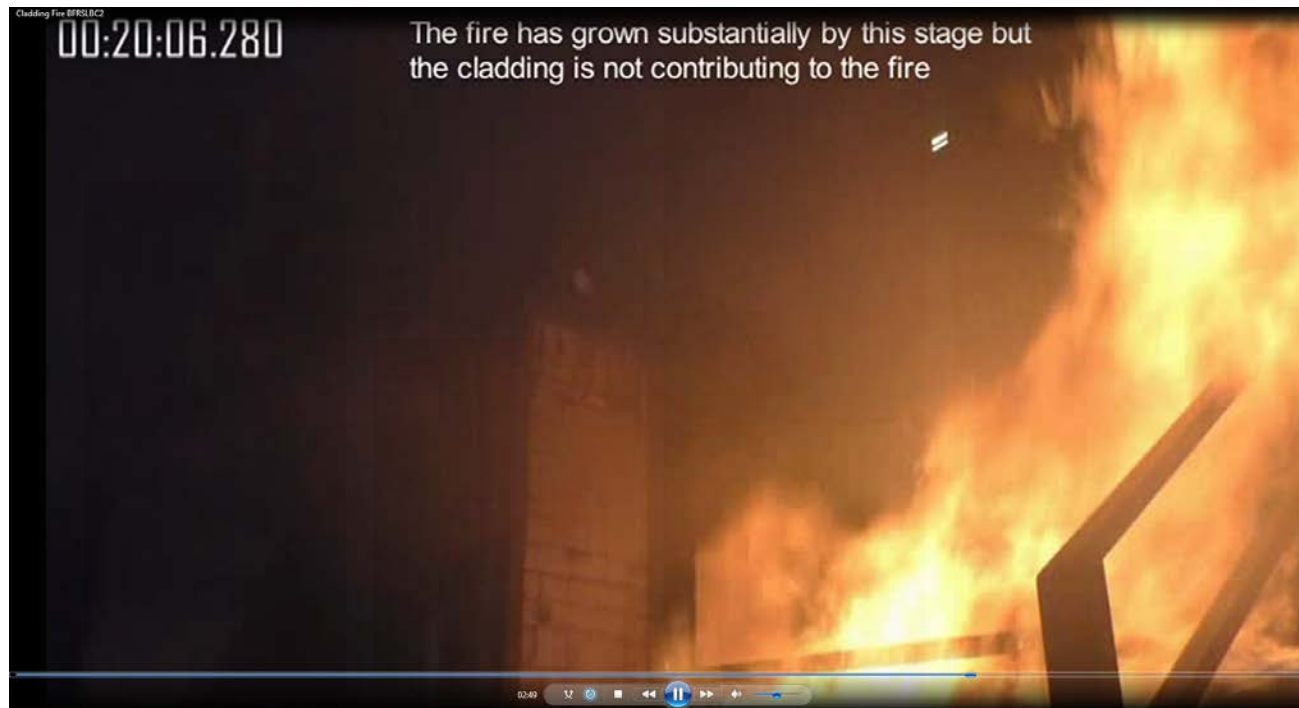
Everything was immediately put on hold while we sought absolute reassurance that the planned external cladding system was safe

Due to the heavy demand for testing facilities for cladding already installed on buildings, we lost many months waiting for the necessary clearances.



# Coping with the unexpected

Not only did we need the reassurance that the cladding system was safe, it was also very important that residents were at ease and had confidence too. The fire test was filmed and made public at another residents event and on the Luton Council website.



# At last – project start



Scaffolding up and ready to go –  
the elusive mast climbers in  
place

PV panels and batteries installed  
and internal works to flats  
completed

External works have revealed  
the need for more testing of the  
concrete to ensure cladding  
system is well secured.

# Confirmation of Output

## Energy Performance Certificate

PREVIEW  
NOT FOR ISSUE

SAP  
© Crown copyright 2009

52, Leabank, LUTON, LU3 3LW

Dwelling type: Mid-floor flat  
Date of assessment: 25 April 2016  
Date of certificate: 06 May 2016  
Reference number: 0000-0000-0000-0000-0000  
Type of assessment: RdSAP, existing dwelling  
Total floor area: 67 m<sup>2</sup>

Use this document to:

- Compare current ratings of properties to see which properties are more energy efficient
- Find out how you can save energy and money by installing improvement measures

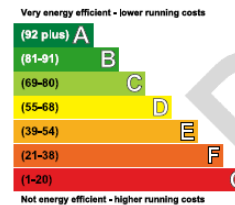
Estimated energy costs of dwelling for 3 years:	£ 1,905
Over 3 years you could save	£ 318

### Estimated energy costs

Lighting	£ 2
Heating	£ 1
Hot Water	£ 4
Totals	£ 1

These figures show how much the water. This excludes energy use for generated by microgeneration.

### Energy Efficiency Rating



### Top actions you can take

Recommended measures

## Energy Performance Certificate

PREVIEW  
NOT FOR ISSUE

SAP  
© Crown copyright 2009

52, Leabank, LUTON, LU3 3LW

Dwelling type: Mid-floor flat  
Date of assessment: 04 May 2016  
Date of certificate: 04 May 2016  
Reference number: 0000-0000-0000-0000-0000  
Type of assessment: RdSAP, existing dwelling  
Total floor area: 67 m<sup>2</sup>

Use this document to:

- Compare current ratings of properties to see which properties are more energy efficient

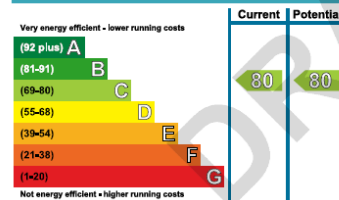
Estimated energy costs of dwelling for 3 years:	£ 1,269
---	---------

### Estimated energy costs of this home

	Current costs	Potential costs	Potential future savings
Lighting	£ 141 over 3 years	£ 141 over 3 years	
Heating	£ 705 over 3 years	£ 705 over 3 years	
Hot Water	£ 423 over 3 years	£ 423 over 3 years	
Totals	£ 1,269	£ 1,269	Not applicable

These figures show how much the average household would spend in this property for heating, lighting and hot water. This excludes energy use for running appliances like TVs, computers and cookers, and any electricity generated by microgeneration.

### Energy Efficiency Rating



The graph shows the current energy efficiency of your home.

The higher the rating the lower your fuel bills are likely to be.

The average energy efficiency rating for a dwelling in England and Wales is band D (rating 60).

- Improved EPC
- Monitoring of residents smart meters where possible to ensure savings are achieved
- Ongoing monitoring and support to ensure savings continue

# Project completion expected summer 2019





# Project Renew – Next?

Two blocks down – another eight to go.....



**European Union**  
European Regional  
Development Fund

**Sue Davies**

**Strategic Energy Manager  
Luton Council  
[sue.davies@luton.gov.uk](mailto:sue.davies@luton.gov.uk)**



# **Energy: Leading global innovative technological solutions**

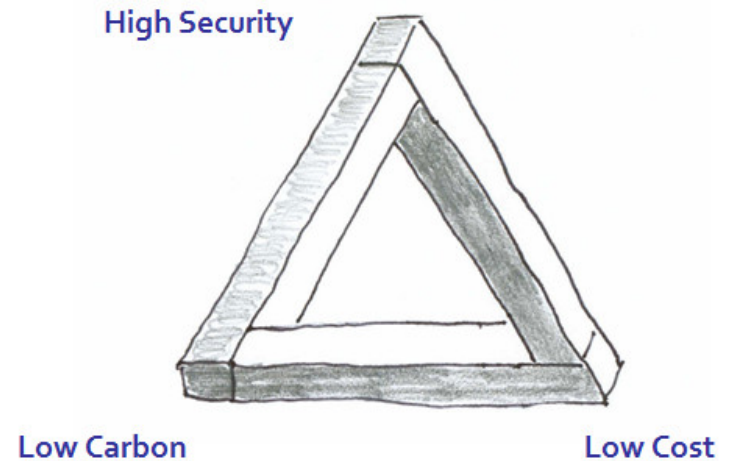
**Phil Longhurst – Professor of Environment & Energy Technology**

**Head - Centre for Climate & Environmental Protection**

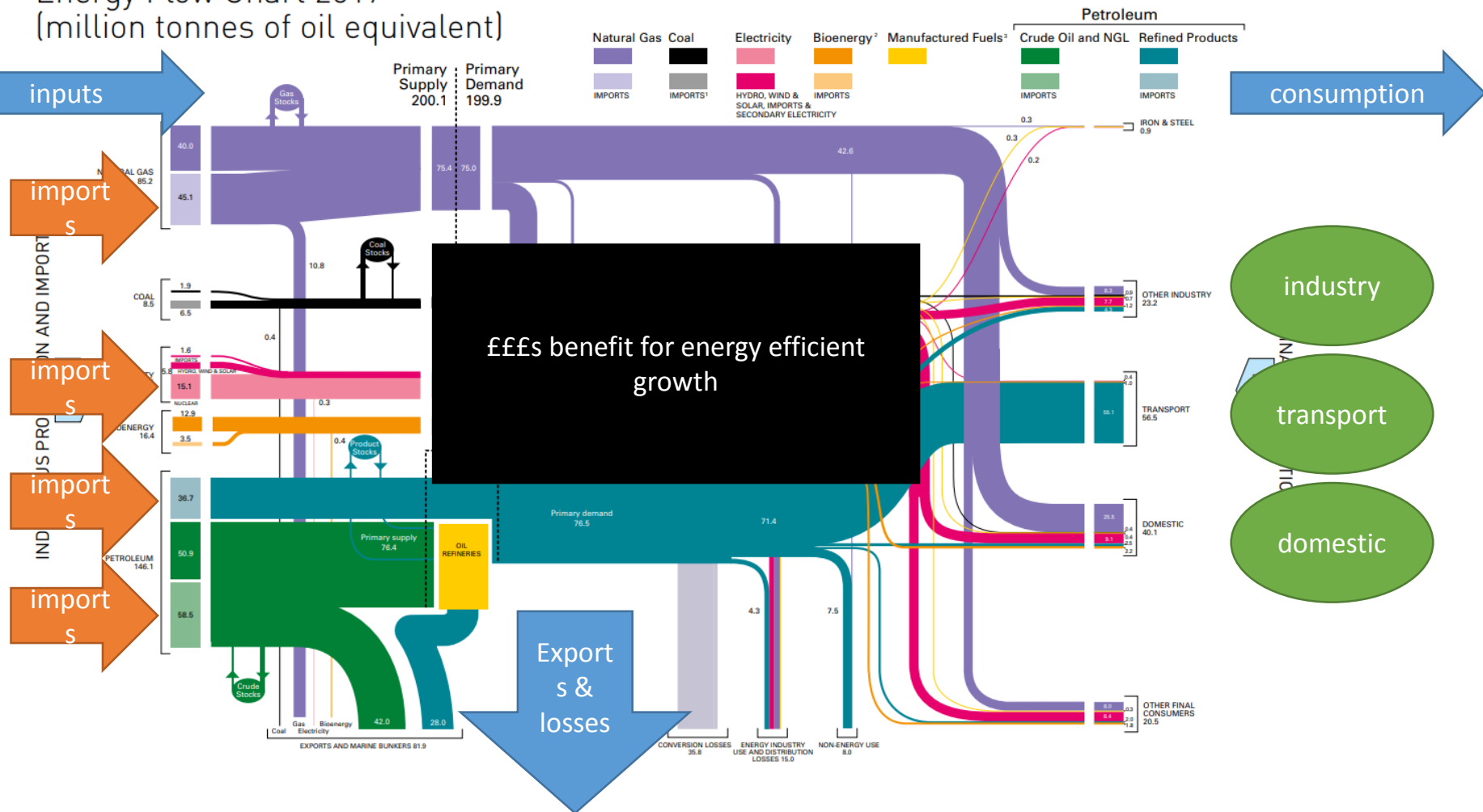
Energy strategy launch - SEMLEP, 28<sup>th</sup> Feb-19

# The Energy Sector's Global Importance

- Secure, affordable and reliable energy supplies underpin:
  - Political and economic stability
  - Ability to manufacture goods and export services competitively
  - A comfortable standard of life
- Future energy requirements:
  - Increasing energy demand from growing populations and industrialisation
  - Production of energy in a clean and sustainable manner



# Energy Flow Chart 2017 (million tonnes of oil equivalent)



# Cranfield University - Energy and Power Theme



## Centre for Energy Systems Strategy

- Global Energy Informatics
- Energy Policy and Strategy
- Energy and Power Distribution Systems
- Energy Storage
- Energy artificial intelligence and Blockchain



## Centre for Thermal Energy Systems and Materials

- Coal
- Oil and Gas
- Offshore Engineering
- Gas Turbine Technology
- ICE
- Fracking



## Centre for Renewable Energy Systems

- Wind
- Wave
- Tidal
- Run-of-river
- Solar PV
- Solar CSP



## Centre for Climate and Environmental Protection

- CCUS
- Power from Waste
- Pollution from Power production
- Industrial Systems Carbon

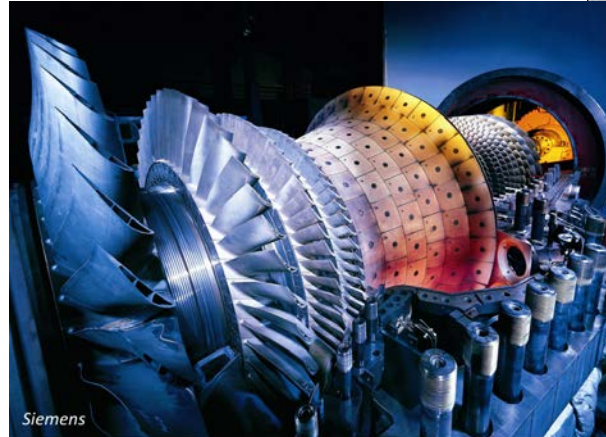




# Cranfield - ENERGY AND POWER

## Activities cover:

- Advanced fossil fuel utilisation
- Carbon capture and storage
- Low carbon energy supply
- Materials for energy systems
- Offshore renewables
- Oil and gas engineering
- Power generation technologies
- Risk and reliability
- Subsea engineering
- Thermal conversion technologies
- Utilisation of wastes as fuel



Total Pazflor Angola Block 17 Subsea Gas Liquid Separator



Jack-up drilling rig



# Experimental facilities

## 4x large-scale facilities

- Electrical Power & Drives Laboratory
- Energy Technology Centre
  - Concentrated Solar Power Laboratory
  - Energy Materials Laboratory
  - Energy Processes Laboratory
  - Energy Technology Laboratory
  - Advanced Thermal Conversion Technology Lab
  - Bioenergy Laboratories & Anaerobic Digester
- Process Systems Engineering Laboratory
- Structural Integrity Laboratory



## Environmental Impacts & Opportunities

- Environmental law/regulation
- Emissions and waste control
- Waste management
- Sustainability
- Re-use and recycling
- Environmental monitoring



## Project Management & leadership

- Project design and procurement
- Project planning
- Regulatory issues
- Health and safety
- Contract law
- Environmental law
- Cost engineering – capex/opex
- Risk management



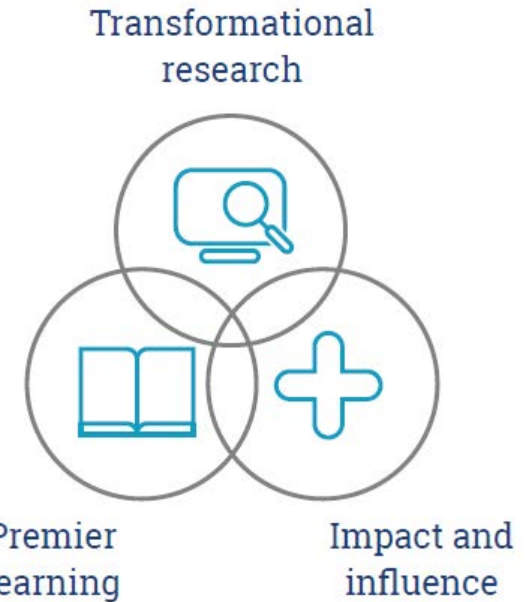


## Industrially-led learning programmes



REMS Centre for Doctoral Training

<http://www.rems-cdt.ac.uk/>





## Partners include...



# *Delegates choice*



## **ERDF Workshop**

### **Lecture Room 1**

**Steve McAteer, Deyton Bell**  
**Sam Bosson, GSE Energy Hub**

## **Tour of Cranfield University**

**Meet Nigel Simms**  
**outside of auditorium**

# Next Steps

- ▶ Work with relevant stakeholders and with the support of the Greater South East Energy Hub to:
  - ▶ Continually update base data and projections
  - ▶ Plan for specific developments
  - ▶ Communicate opportunities.
- ▶ Be cognisant of the granularity across the SEMLEP area and work at all scales.
- ▶ Welcome involvement in demonstrator and scale up opportunities.
- ▶ Start now and create a virtuous cycle.

