

# Oxfordshire Energy Strategy Growth Board

28<sup>th</sup> April 2018



Minute Item 82

# The opportunity

We have a real opportunity to build on Oxfordshire's already strong reputation for energy and low carbon innovation through:

- The Oxfordshire Local Industrial Strategy
- The Oxfordshire Infrastructure Strategy (OXIS);
- The proposed Oxfordshire Joint Statutory Spatial Plan
- The Oxfords to Cambridge Corridor
- The Greater South East Energy Hub

# Timetable...

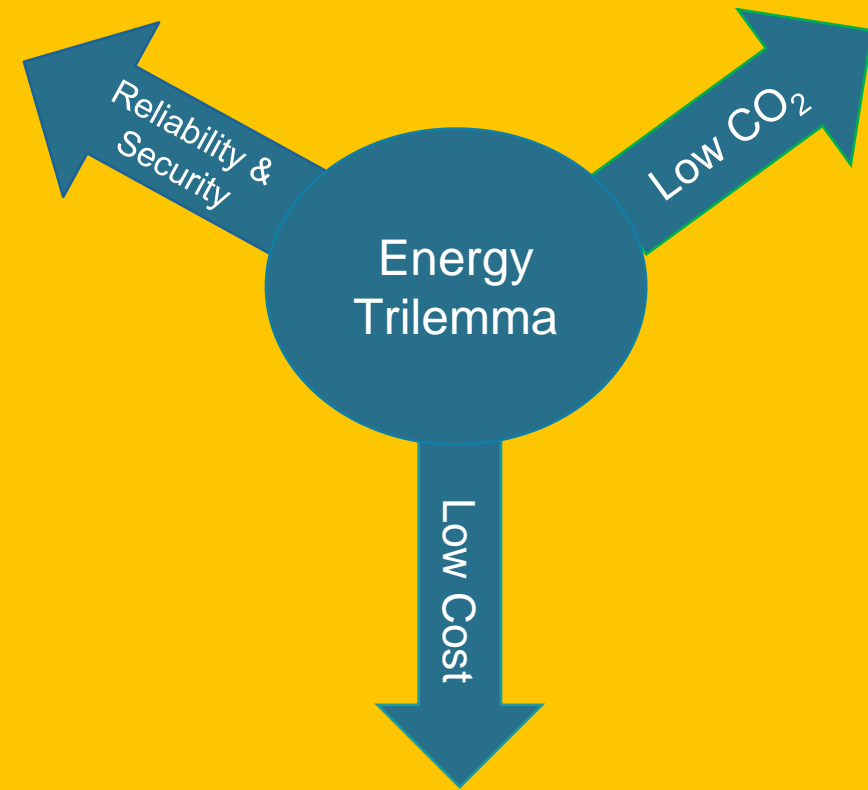
- Draft to client 26th March
- Energy Strategy Steering Group – 29th March
- Feedback collated and comments- 4th April
- Executive officers group – 10<sup>th</sup> April
- Ongoing interviews with stakeholders
- Workshop 2 – 18<sup>th</sup> April
- **Growth Board – 26<sup>th</sup> April**
- Redraft and finalise report

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**“Our objective is to ensure that a shortage of clean, reliable, low cost energy does not constrain the delivery of growth in Oxfordshire”.**

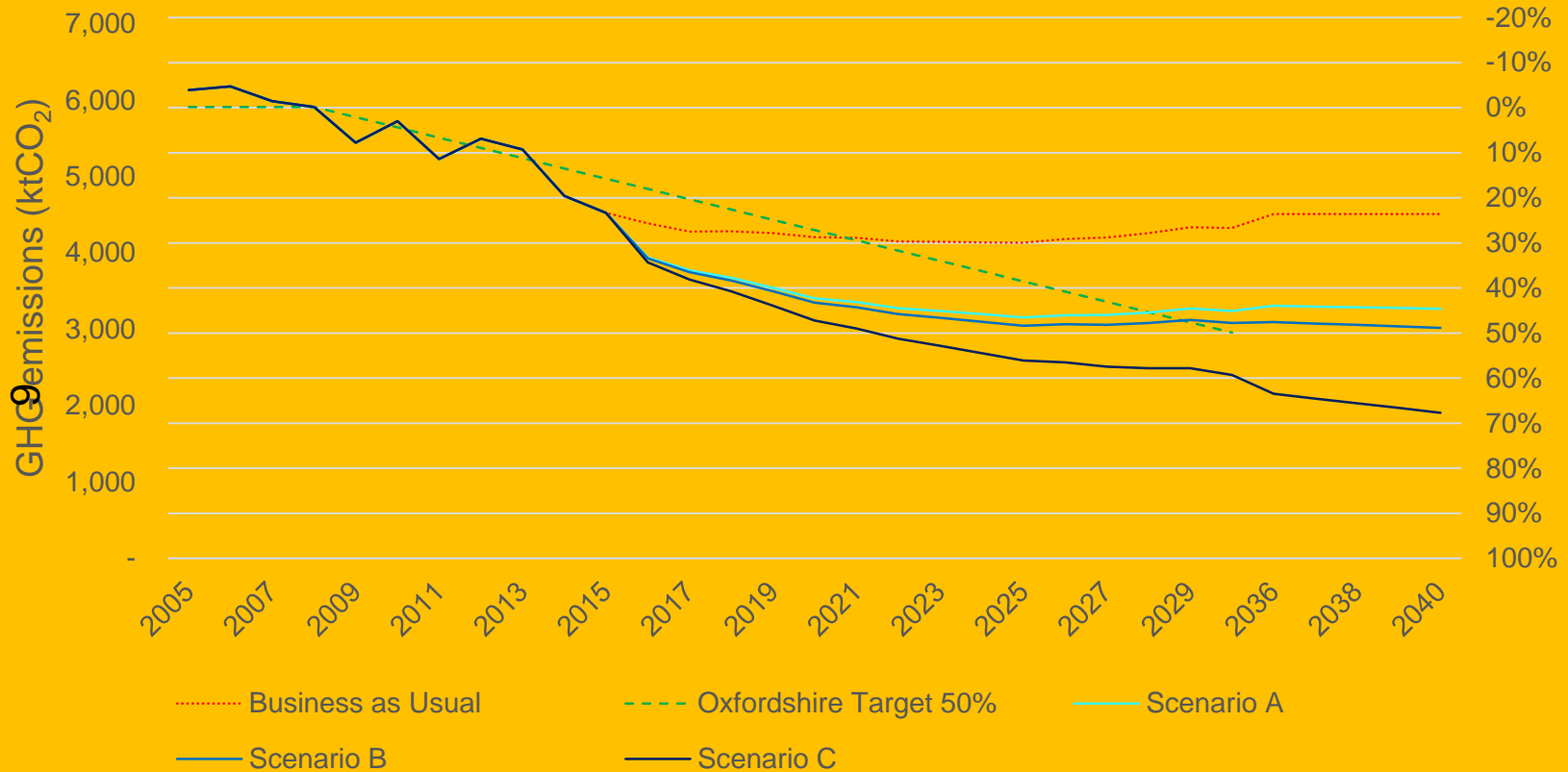
# The Challenge...

The 'energy trilemma' encapsulates the challenges facing Oxfordshire. It's about striking a balance between these different dimensions.



# Low CO2 - Clean Energy

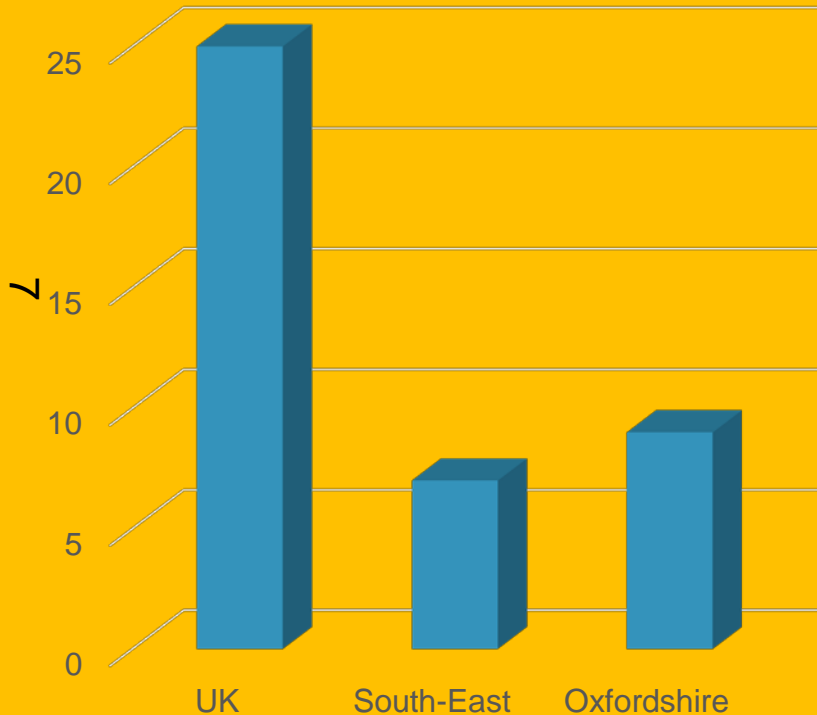
## halving carbon emissions by 2030



Scenario	Carbon Saving 2030
A - BAU, low carbon ambition	45 %
B – Incremental growth + moderate ambition	48 %
<b>C – high growth + high ambition for low carbon initiatives</b>	<b>59 %</b>

# Low CO2 - Clean Energy

% energy from renewables



The current mix of renewables

## 37 Consented/Operational (369.4 MW)

- 28 Solar PV (312.7 MW)
- 1 Energy from Waste (24 MW)
- 3 Landfill Gas (13.4 MW)
- 3 Anaerobic Digestion (6.8 MW)
- 1 On-Shore Wind (6.5 MW)
- 1 Advanced Conversion (6 MW)

## 1 In Planning (6.9 MW)

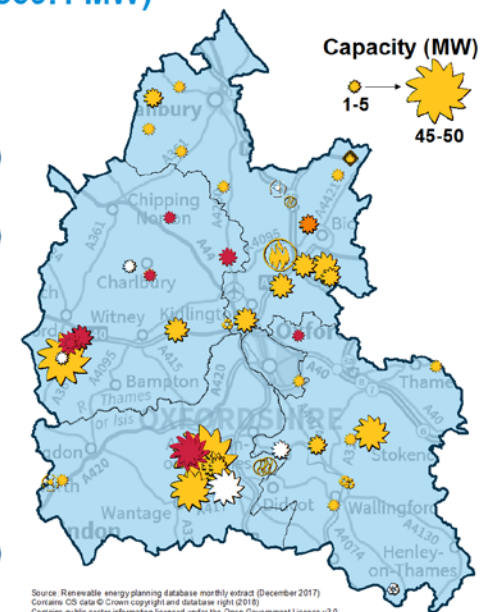
- 1 Solar PV (6.9 MW)

## 10 Refused (121.4 MW)

- 10 Solar PV (121.4 MW)

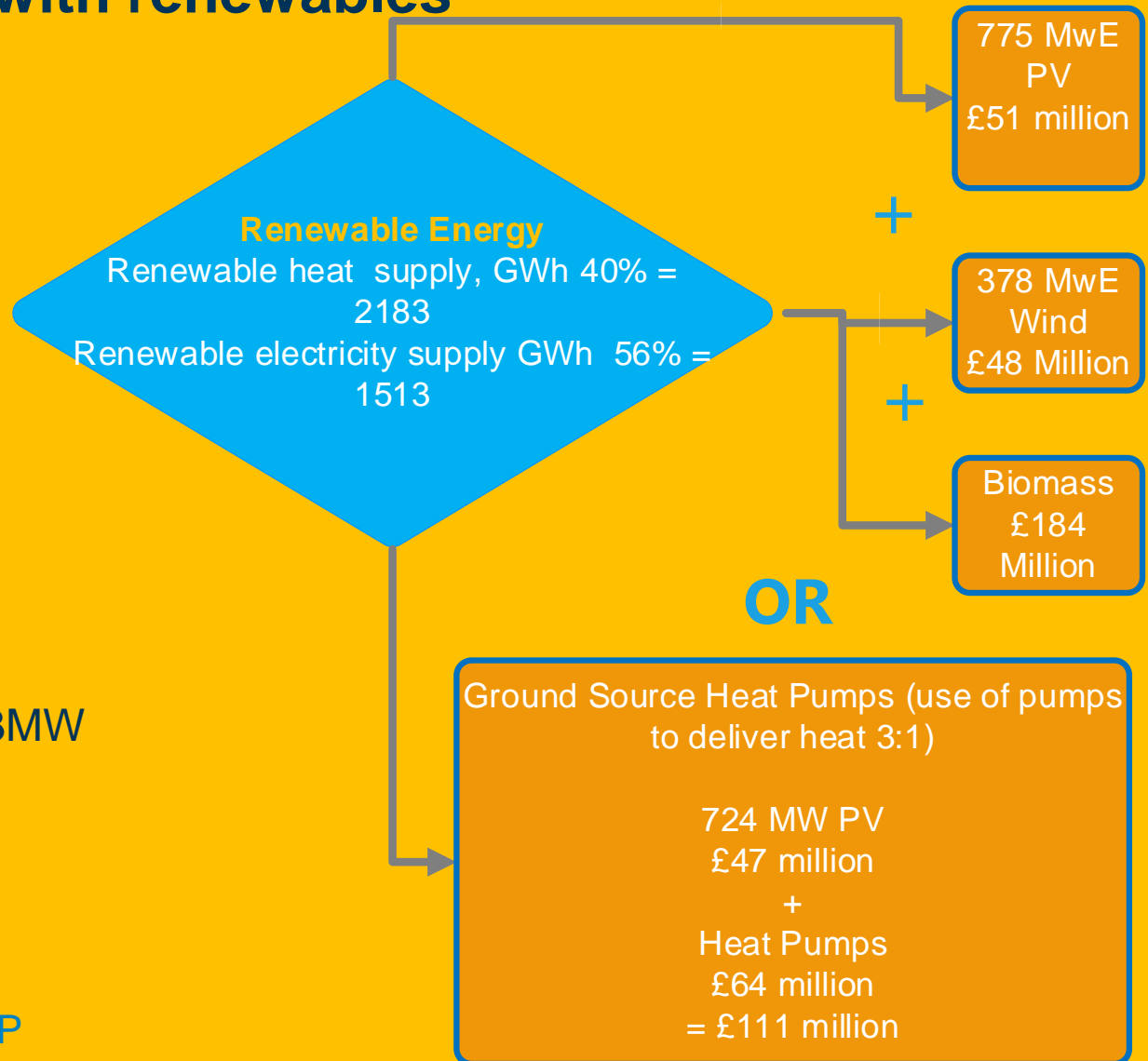
## 6 Withdrawn (52.7 MW)

- 4 Solar PV (42 MW)
- 1 Anaerobic Digestion (1.5 MW)
- 1 On-Shore Wind (9.2 MW)



# Low CO2 – Clean Energy

## Serving growth with renewables



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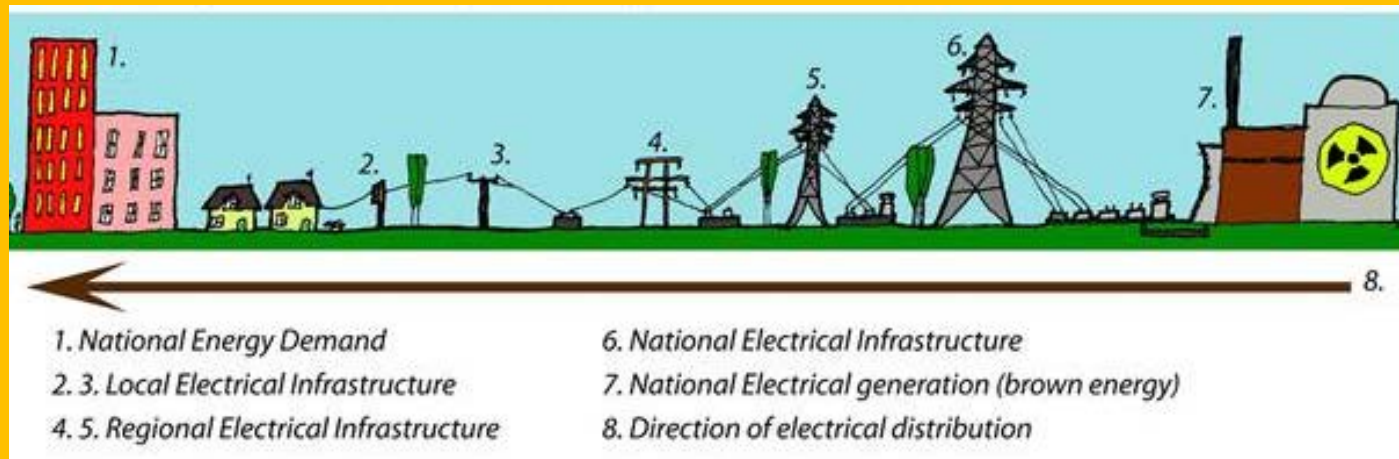
126 wind turbines 2.5-3MW  
1,568 hectares PV



# Reliability

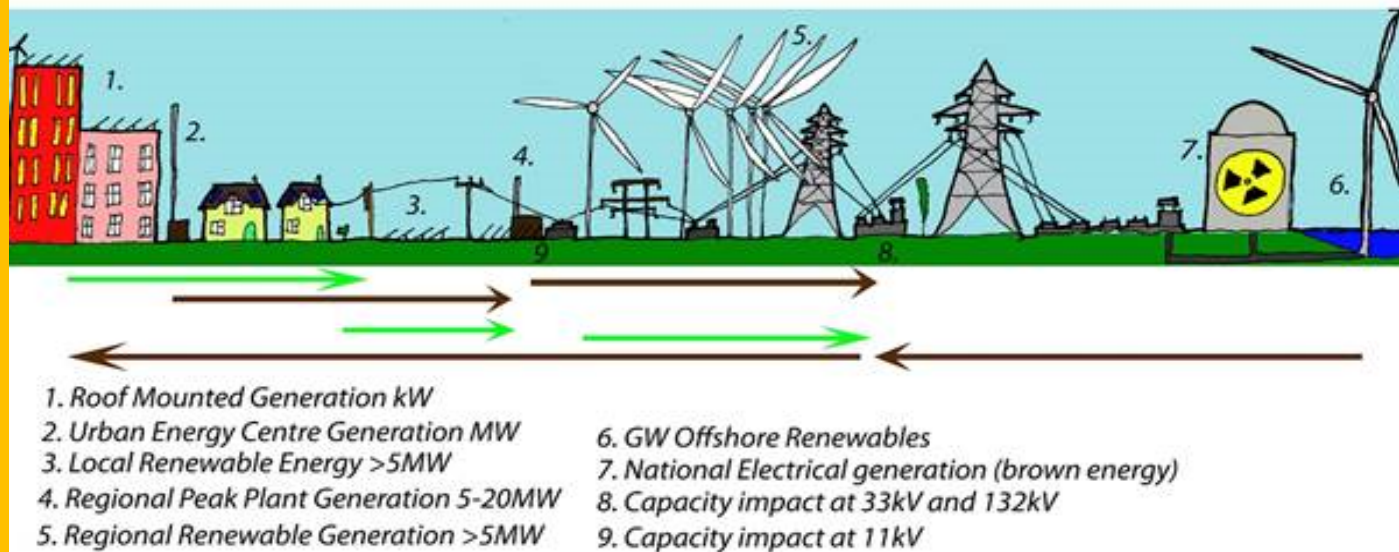
## Changes in the grid

Historic Grid



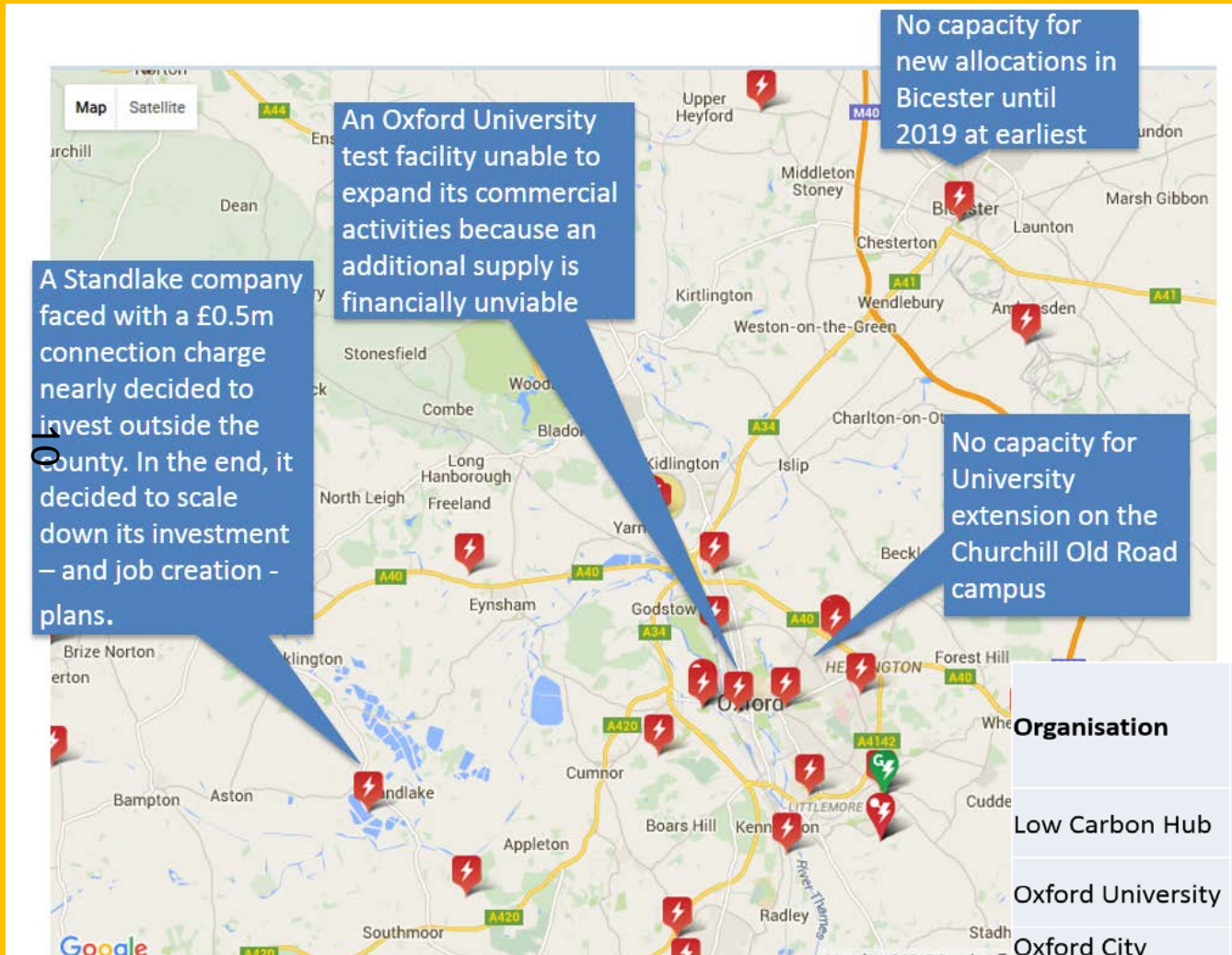
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Future Grid



# Reliability

## Connecting local power generation and energy storage



Organisation	No of Schemes	Size kWp		
		Desired	Actual	Lost
Low Carbon Hub	14	1,710	700	-1010
Oxford University	3	358	150	-208
Oxford City Council	5	423	250	-173
<b>TOTALS</b>	<b>22</b>	<b>2,491</b>	<b>1,100</b>	<b>-1,391</b>

# Reliability

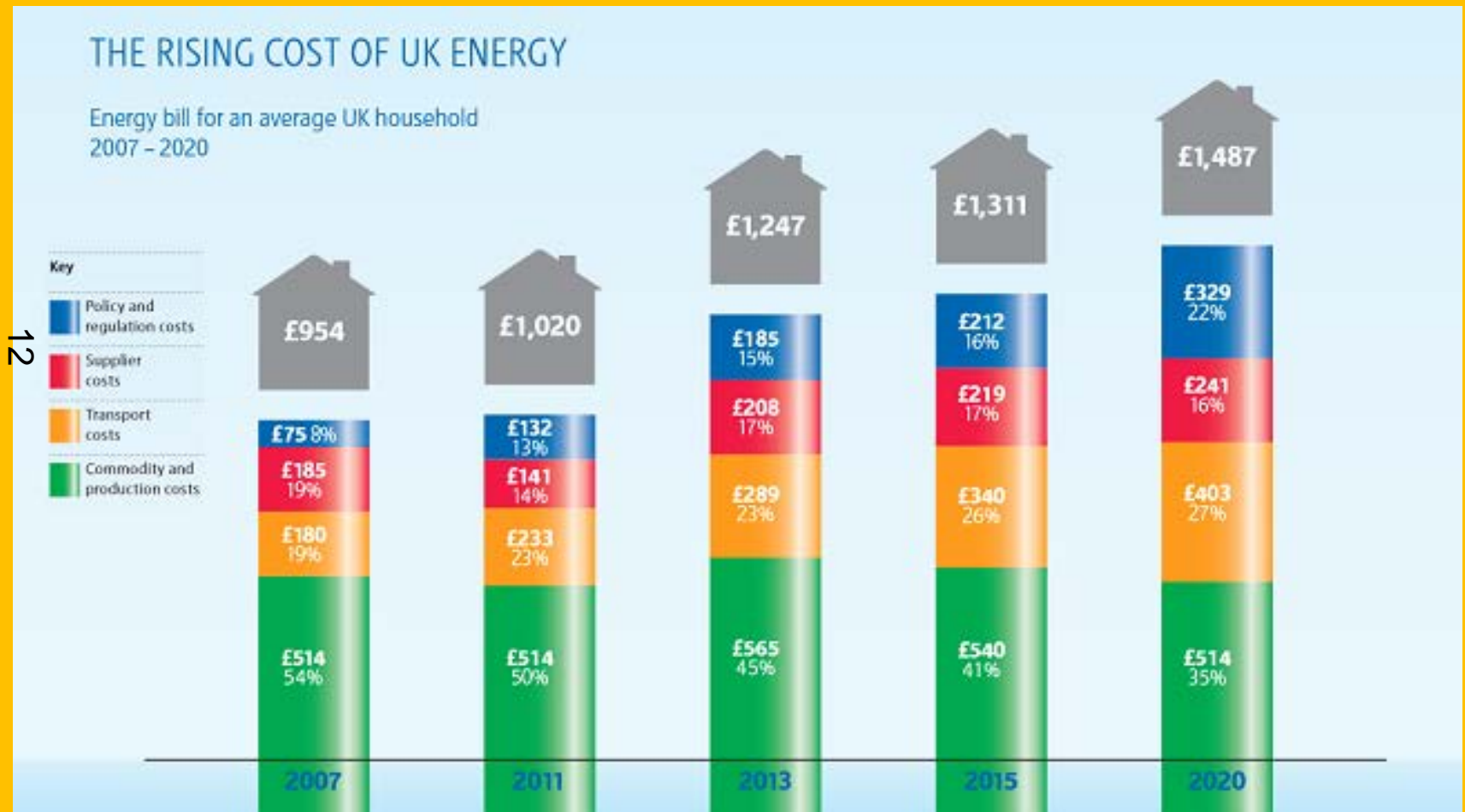
There are some elephants in the room

- Space heating in buildings
- Retro-fitting could achieve much, much more
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- Electric vehicle charging
- Grid scale battery storage
- Domestic battery storage
- Hydrogen, fusion and emerging technology



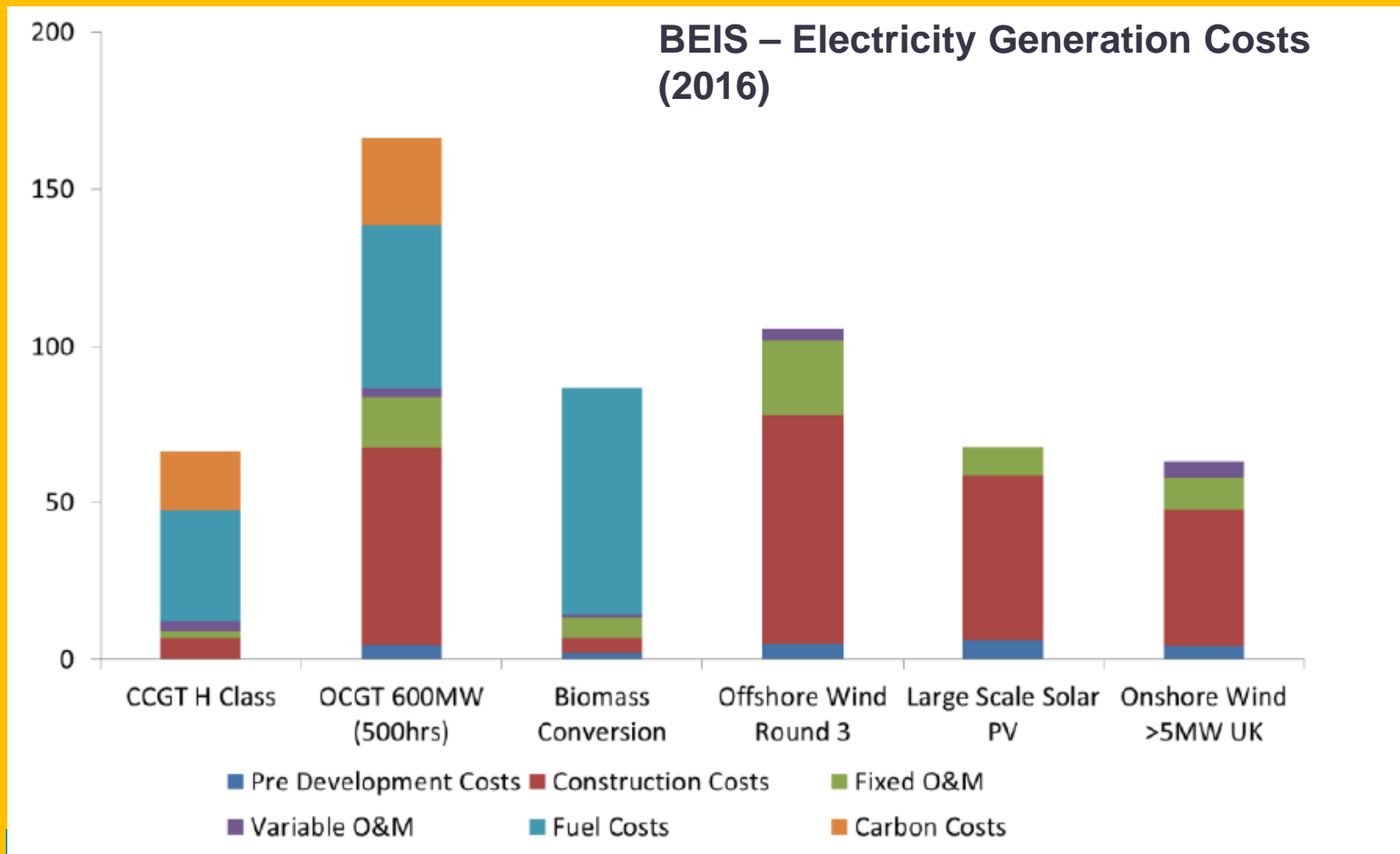
# Low Cost

## Affordability of energy supply to all users- commercial and domestic



# Low Cost

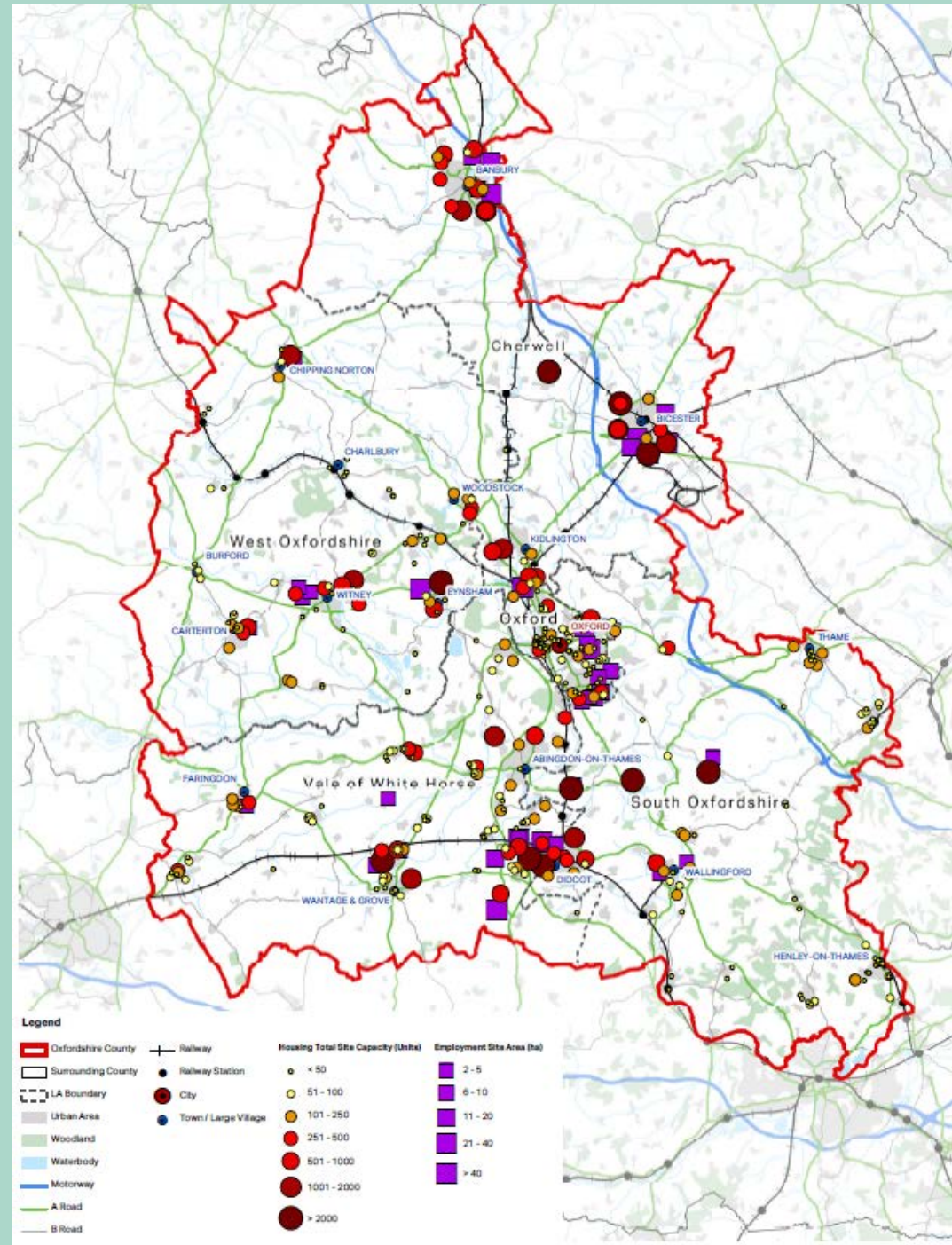
How can stakeholders influence decisions to allow lower cost, low-carbon investments to be made?



# The Opportunity

Capture low carbon, clean growth:

- 123,500 homes – at a rate of around 5,100 dwellings per annum;
- 101,000 jobs – 25% job growth;
- 267,000 more people - 39% population growth
- All by 2040



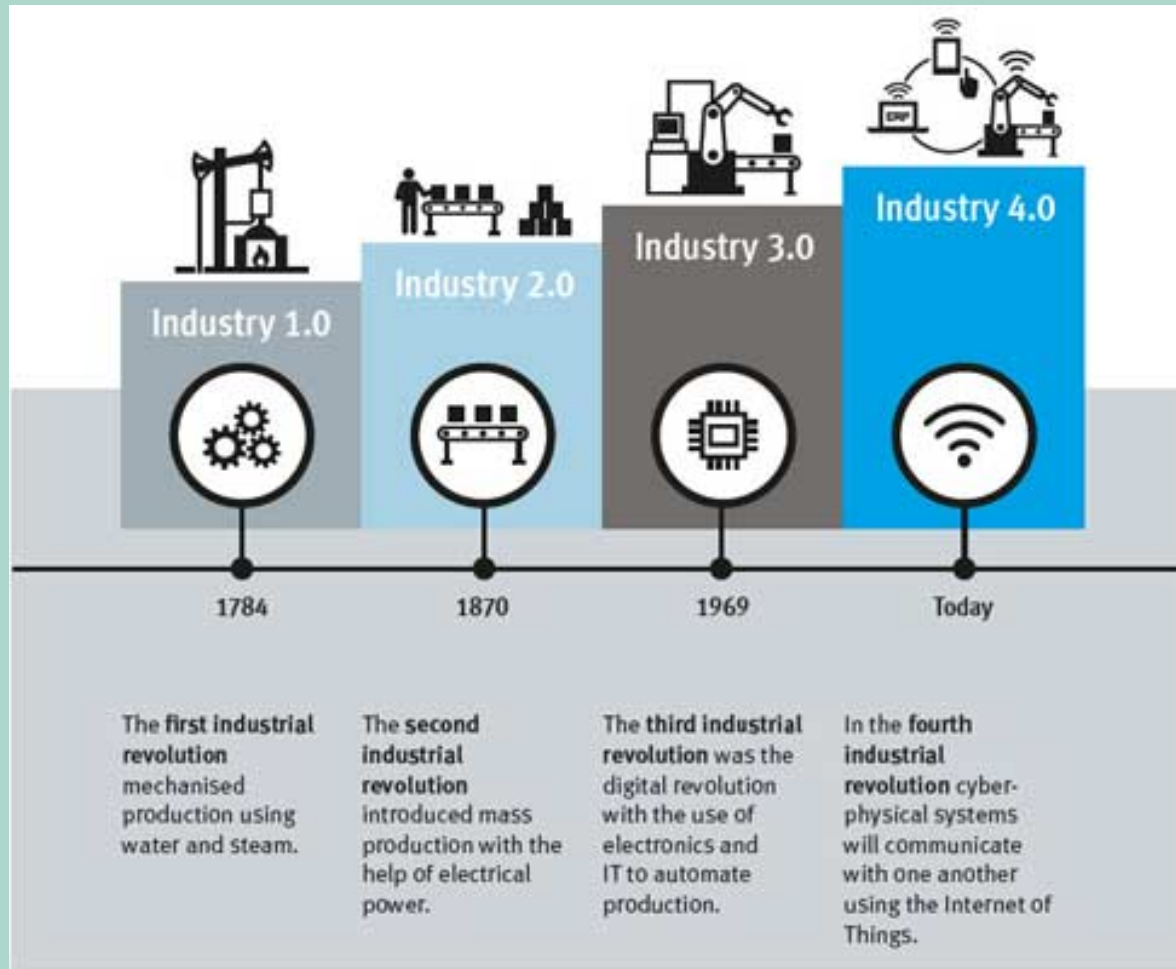
# The Opportunity

- Commercial, research and non-domestic users are growing and their demand is growing
- Science and Research- Harwell, Culham, University of Oxford
- 15 • Industrial – BMW, Prodrive



# The Opportunity

## Planning for the Fourth Industrial Revolution



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# UK Industrial Strategy

Aims to seize new growth opportunities for UK -  
Oxfordshire has specialisms in “three grand challenges”

- AI and data economy
- Future of mobility
- **Clean Growth**

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- **Clean Growth Strategy-** delivering increased economic growth and decreased emissions for decarbonising all sectors of the UK economy through the 2020s.
  - End sale of new conventional cars by 2040
  - Encourage roll-out of low carbon heating

# Oxfordshire opportunities

## Strong evidence base and energy networks

Oxfordshire has opportunities to build on:

### Low carbon economy

low carbon sectors already generate £1.15 billion/year

Could be generating 11,000 new jobs by 2030

### Energy groups

low carbon hub  
University  
Culham  
Harwell

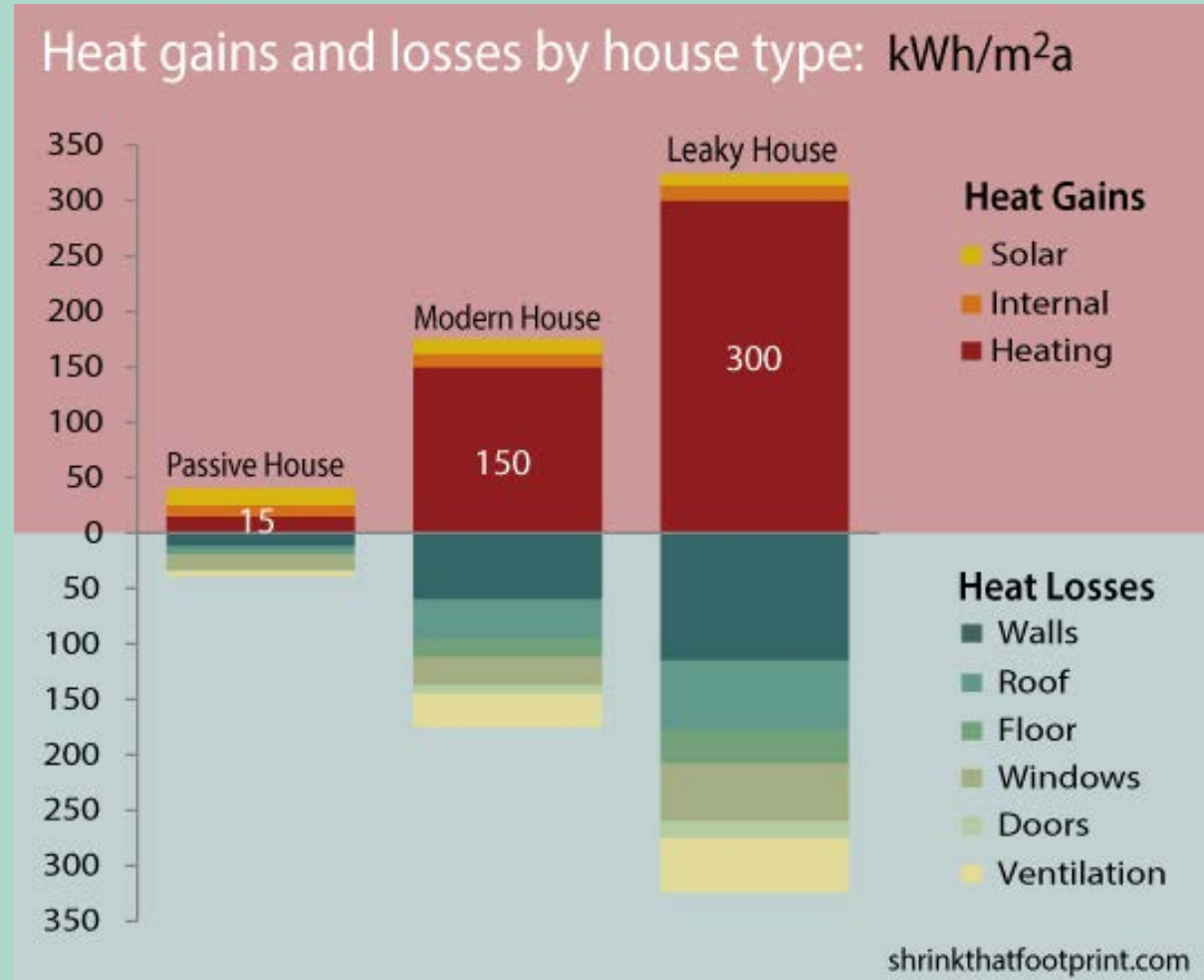
### Community projects

Over 60 currently underway aimed at sustainable energy production and research

# Using Energy Efficiently

Building standards cannot be imposed on developers

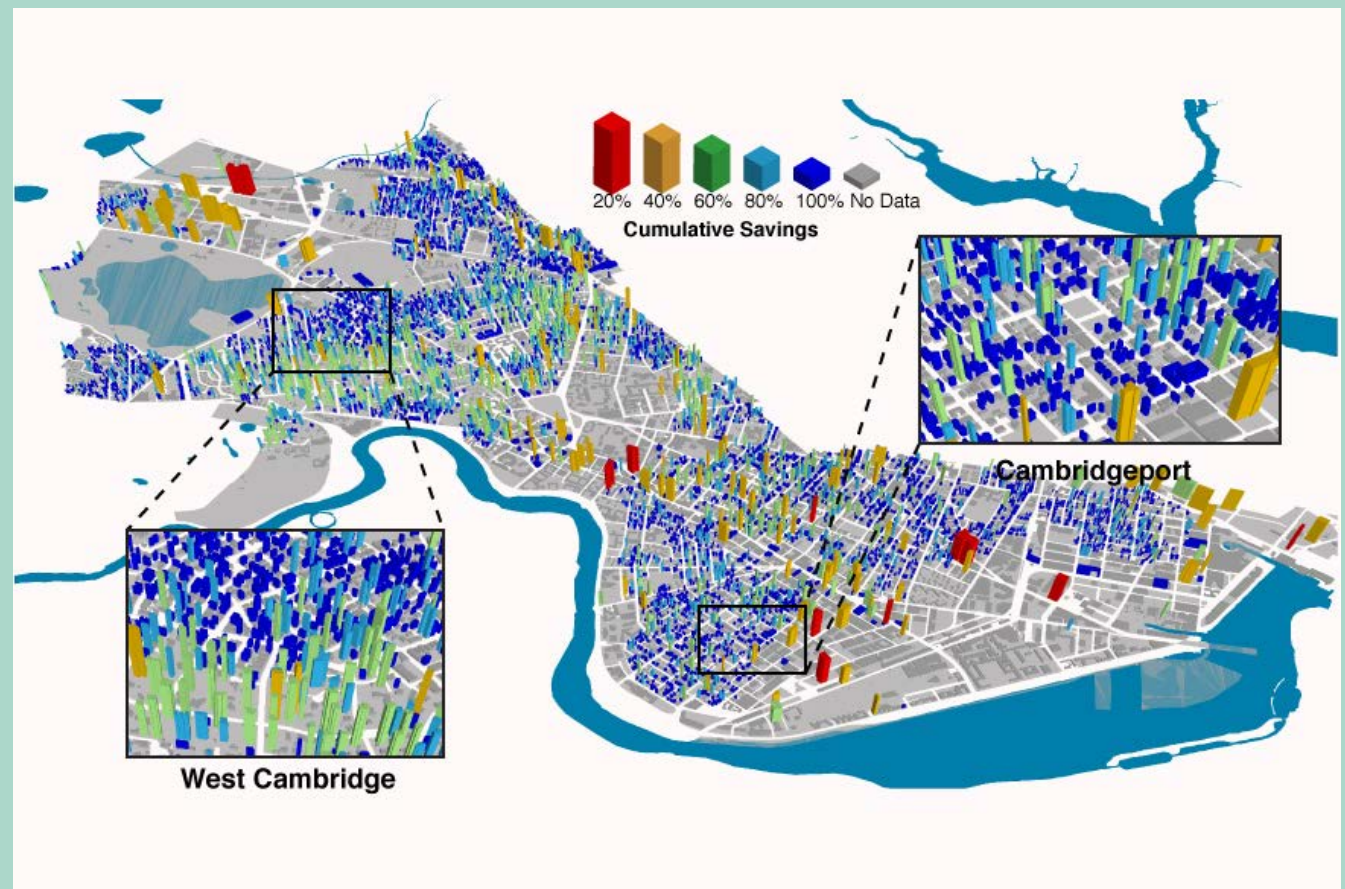
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# Existing Buildings

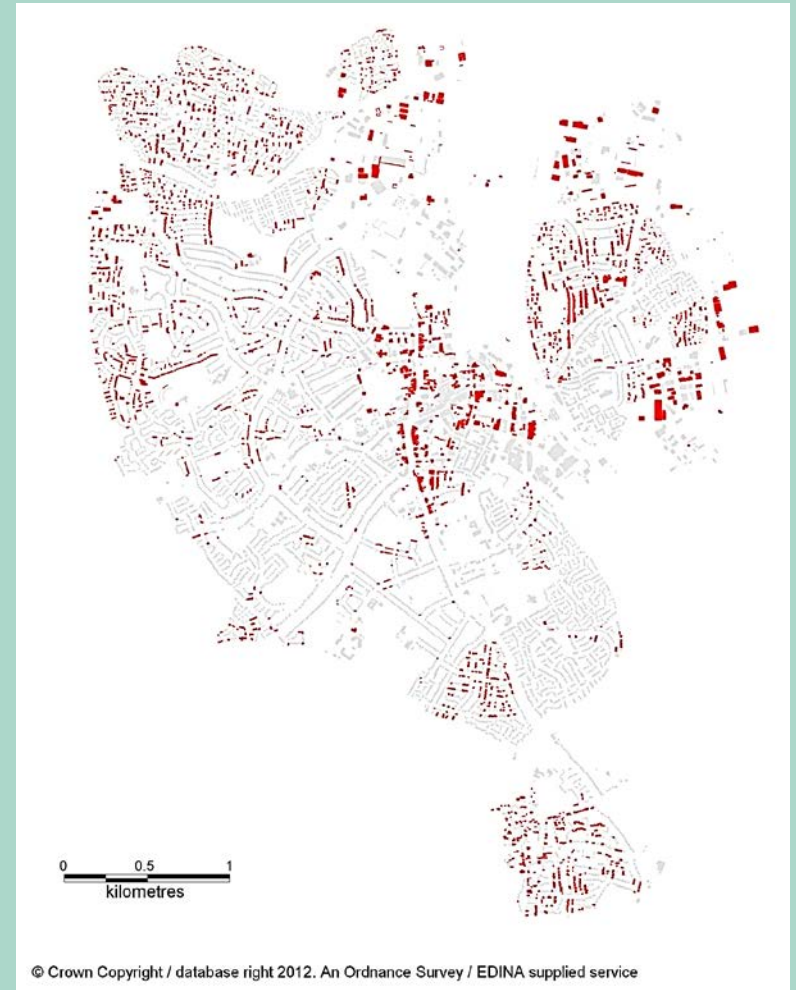
Retrofit energy efficiency schemes will have an important future (existing homes will always outnumber new builds). Oxfordshire will need to look very carefully at 'what works' and what can genuinely be sustained

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# Opportunities for PV baseload provision/ rooftop rollout

South facing roofs suitable for PV, Banbury, 2012



# Opportunities for CHP, EfW and heat

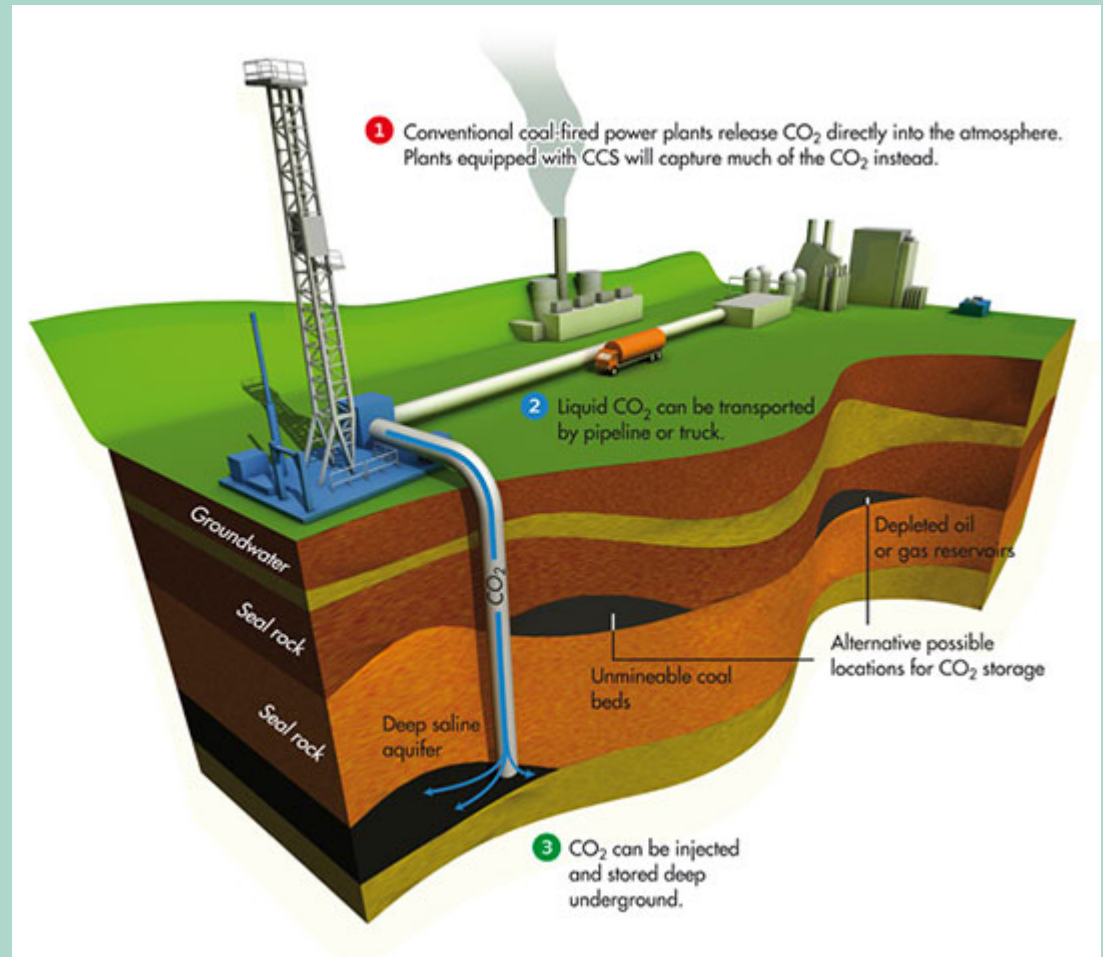
Combined heat and power / district heating

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# Emerging technology opportunities

- Carbon Capture and Storage
- 23 • Hydrogen – methane mix (Oxford Hydrogen Hub has launched)
- Ammonia



# Strategic Responses

## The four themes

- Energy Efficiency
- Clean power generation
- Grid Capacity
- Managing Change

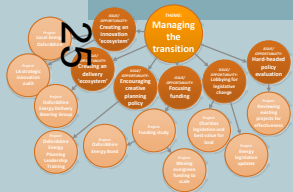
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And five key conclusions...

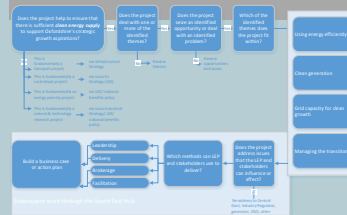


# How the responses were developed

Source 1: Study Analysis



Source 2: Workshop data capture



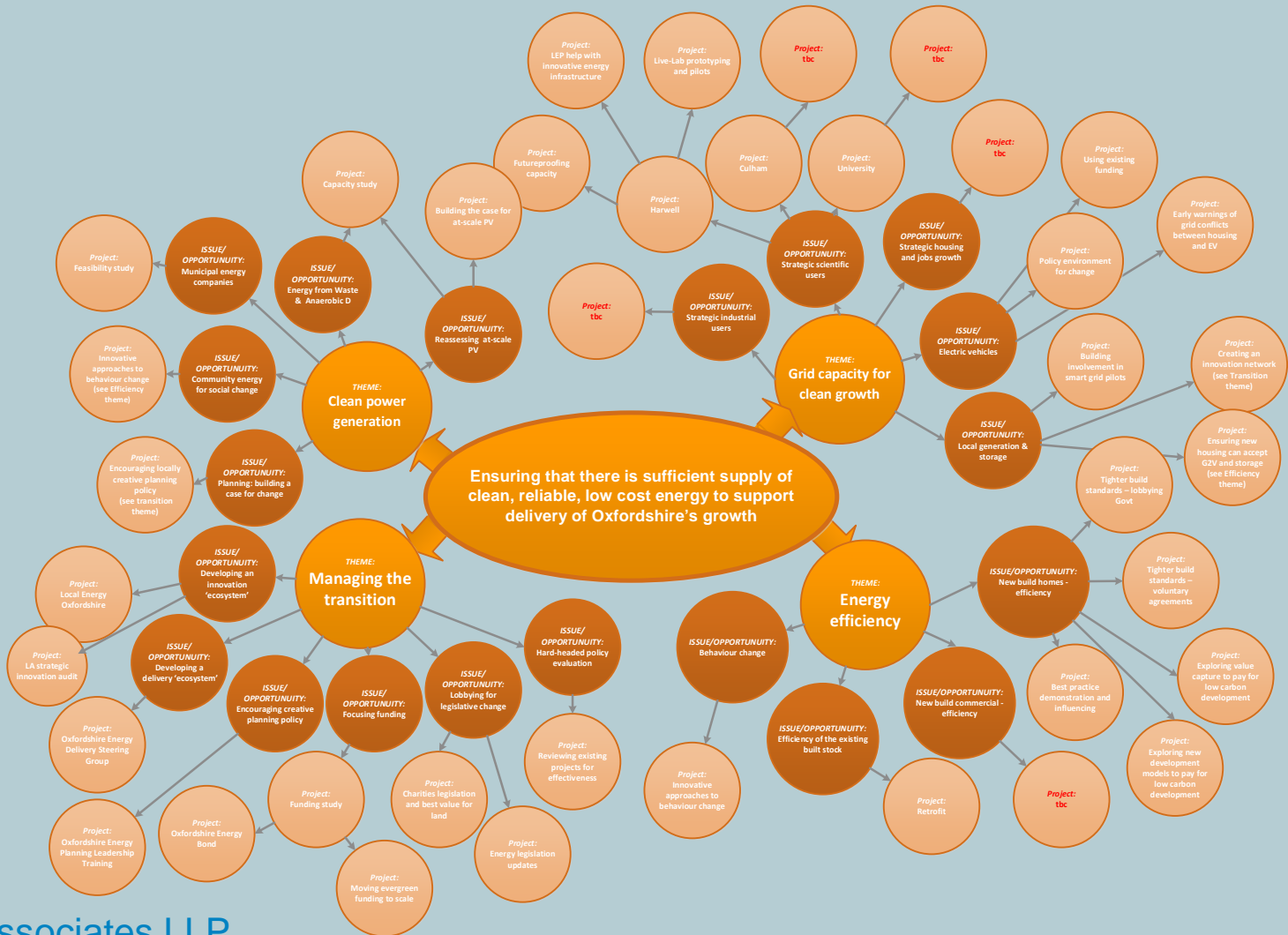
Source 3: Existing projects

Project Name	Location	Start Date	End Date	Status	Priority	Impact	Notes
Project A	Location A	2023-01-01	2023-12-31	Completed	High	Positive	Notes for Project A
Project B	Location B	2023-02-01	2024-01-31	In Progress	Medium	Neutral	Notes for Project B
Project C	Location C	2023-03-01	2024-02-28	Planned	Low	Negative	Notes for Project C
Project D	Location D	2023-04-01	2024-03-31	On Hold	Medium	Positive	Notes for Project D
Project E	Location E	2023-05-01	2024-04-30	Completed	High	Positive	Notes for Project E
Project F	Location F	2023-06-01	2024-05-31	In Progress	Medium	Neutral	Notes for Project F
Project G	Location G	2023-07-01	2024-06-30	Planned	Low	Negative	Notes for Project G
Project H	Location H	2023-08-01	2024-07-31	On Hold	Medium	Positive	Notes for Project H
Project I	Location I	2023-09-01	2024-08-31	Completed	High	Positive	Notes for Project I
Project J	Location J	2023-10-01	2024-09-30	In Progress	Medium	Neutral	Notes for Project J
Project K	Location K	2023-11-01	2024-10-31	Planned	Low	Negative	Notes for Project K
Project L	Location L	2023-12-01	2024-11-30	On Hold	Medium	Positive	Notes for Project L
Project M	Location M	2024-01-01	2025-01-31	Completed	High	Positive	Notes for Project M
Project N	Location N	2024-02-01	2025-02-28	In Progress	Medium	Neutral	Notes for Project N
Project O	Location O	2024-03-01	2025-03-31	Planned	Low	Negative	Notes for Project O
Project P	Location P	2024-04-01	2025-04-30	On Hold	Medium	Positive	Notes for Project P
Project Q	Location Q	2024-05-01	2025-05-31	Completed	High	Positive	Notes for Project Q
Project R	Location R	2024-06-01	2025-06-30	In Progress	Medium	Neutral	Notes for Project R
Project S	Location S	2024-07-01	2025-07-31	Planned	Low	Negative	Notes for Project S
Project T	Location T	2024-08-01	2025-08-31	On Hold	Medium	Positive	Notes for Project T
Project U	Location U	2024-09-01	2025-09-30	Completed	High	Positive	Notes for Project U
Project V	Location V	2024-10-01	2025-10-31	In Progress	Medium	Neutral	Notes for Project V
Project W	Location W	2024-11-01	2025-11-30	Planned	Low	Negative	Notes for Project W
Project X	Location X	2024-12-01	2026-01-31	On Hold	Medium	Positive	Notes for Project X

Project development and prioritisation through the South East Energy Hub

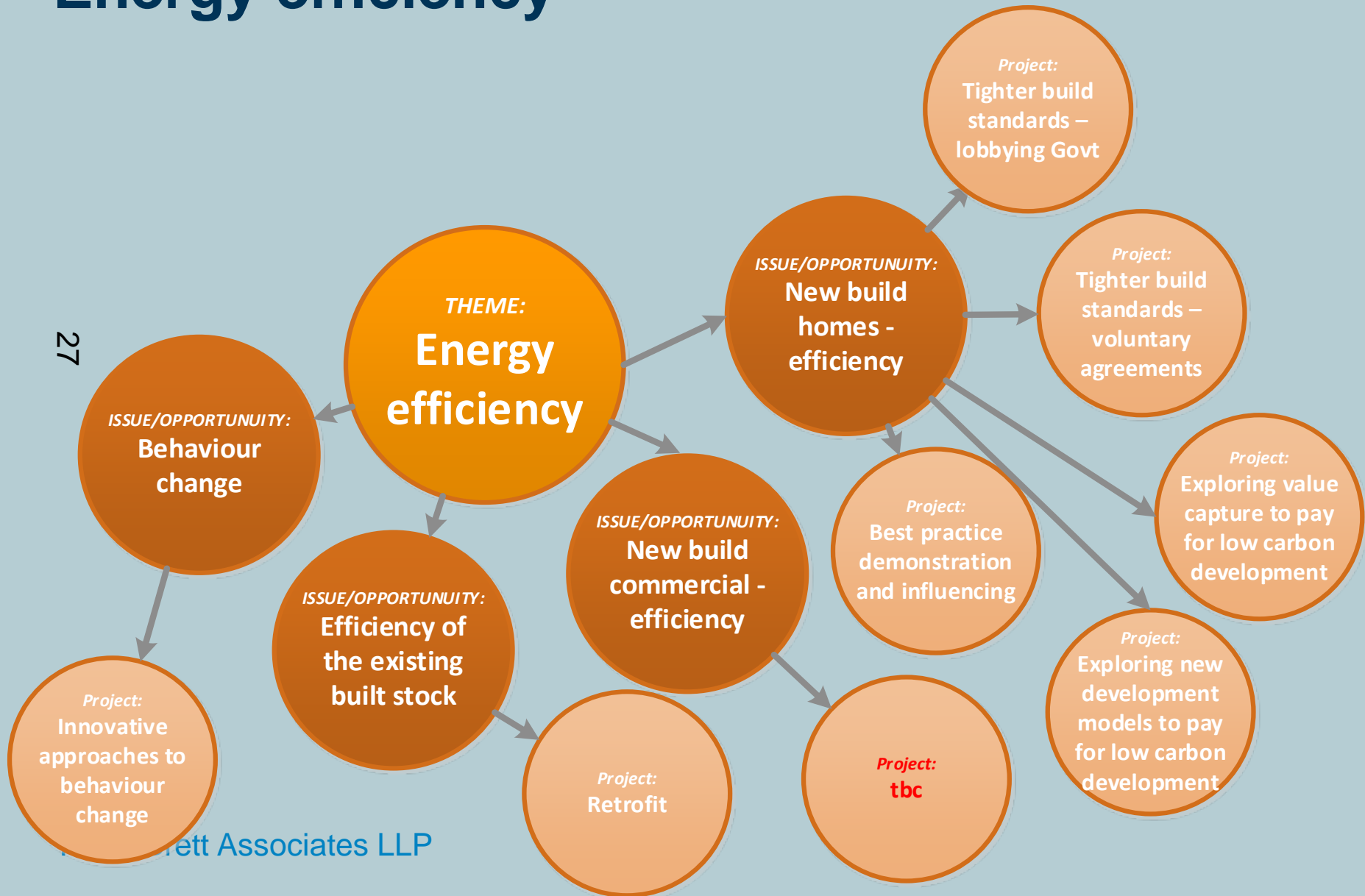
# Understanding the interactions

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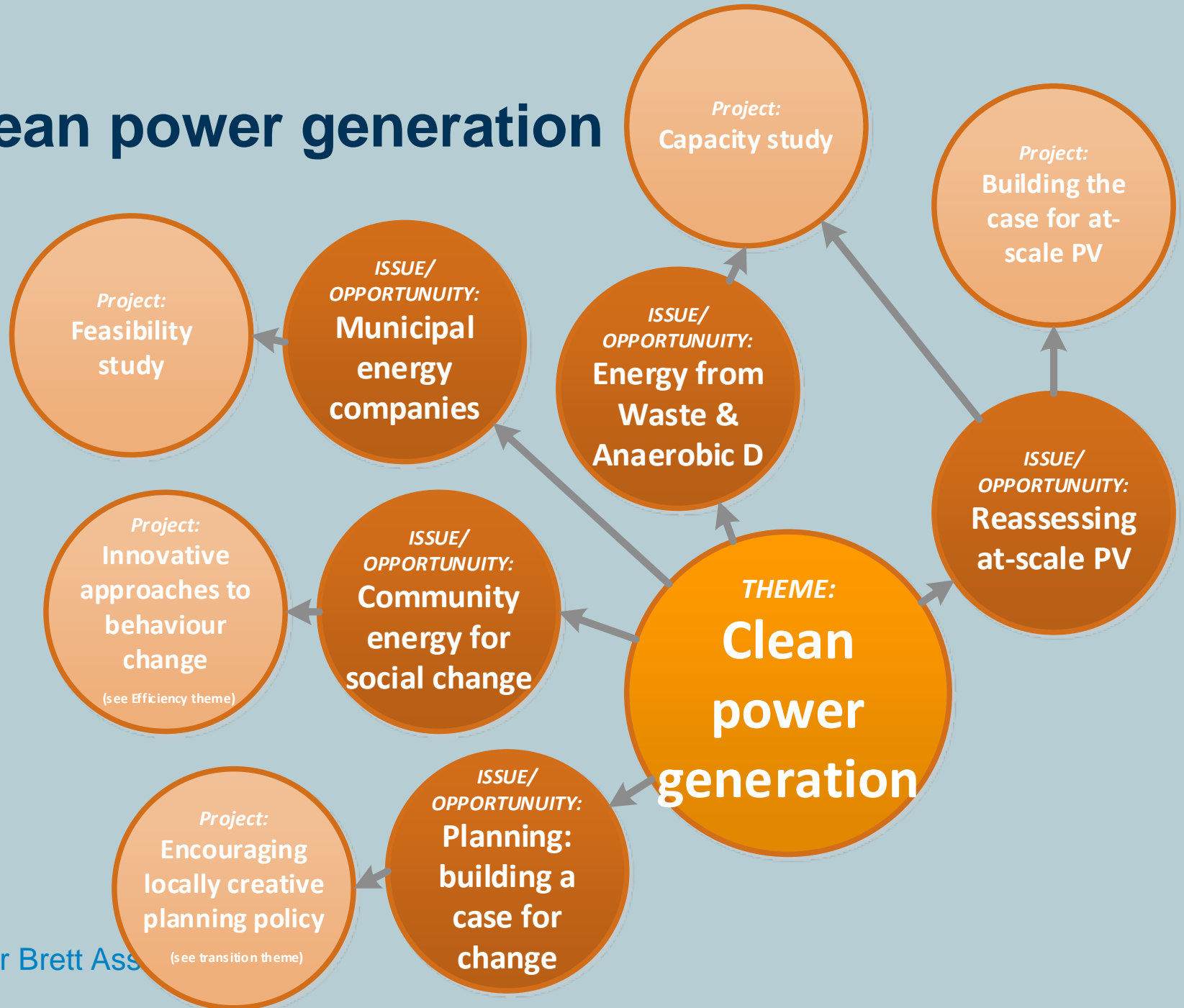


# Energy efficiency

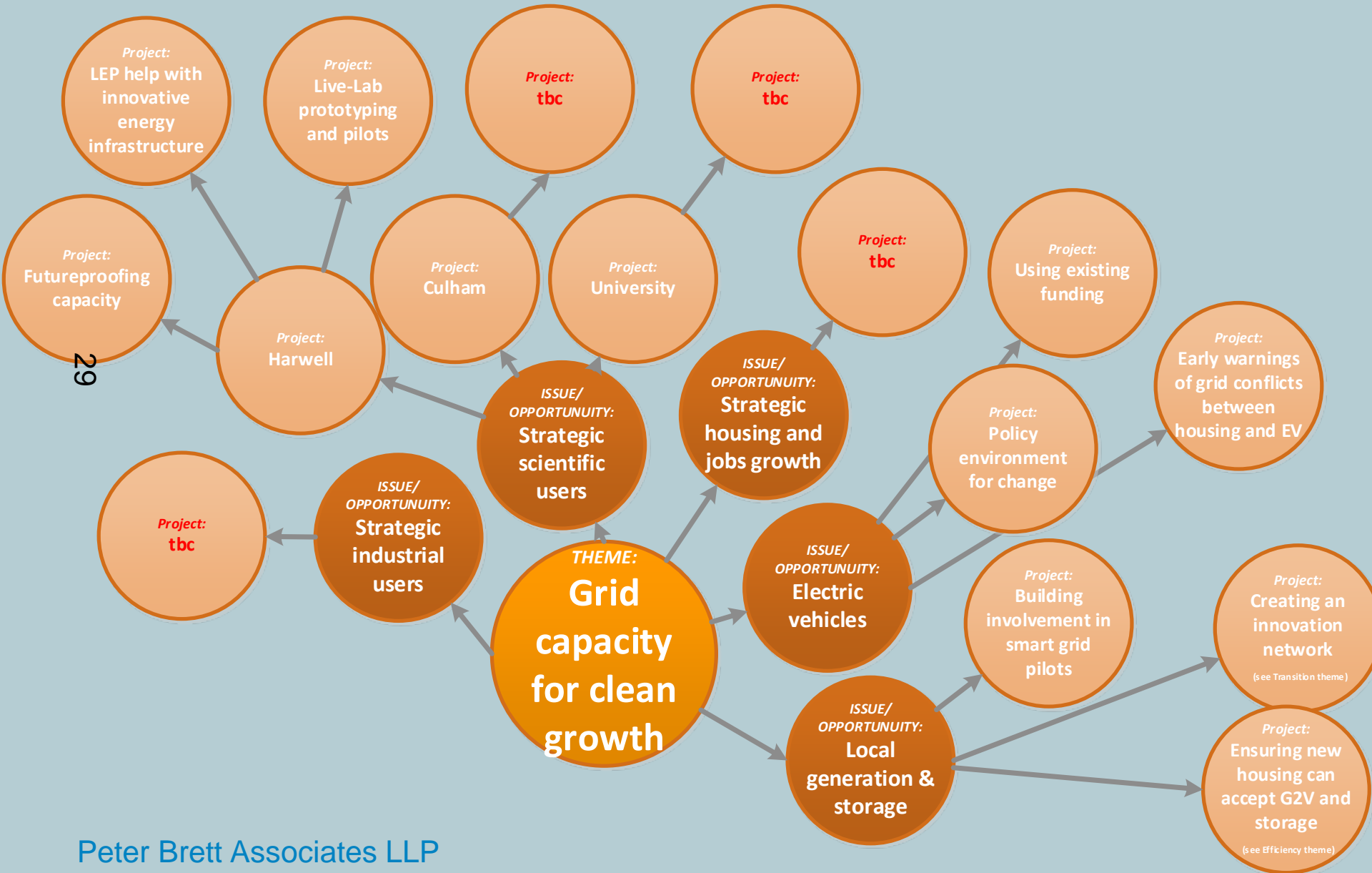
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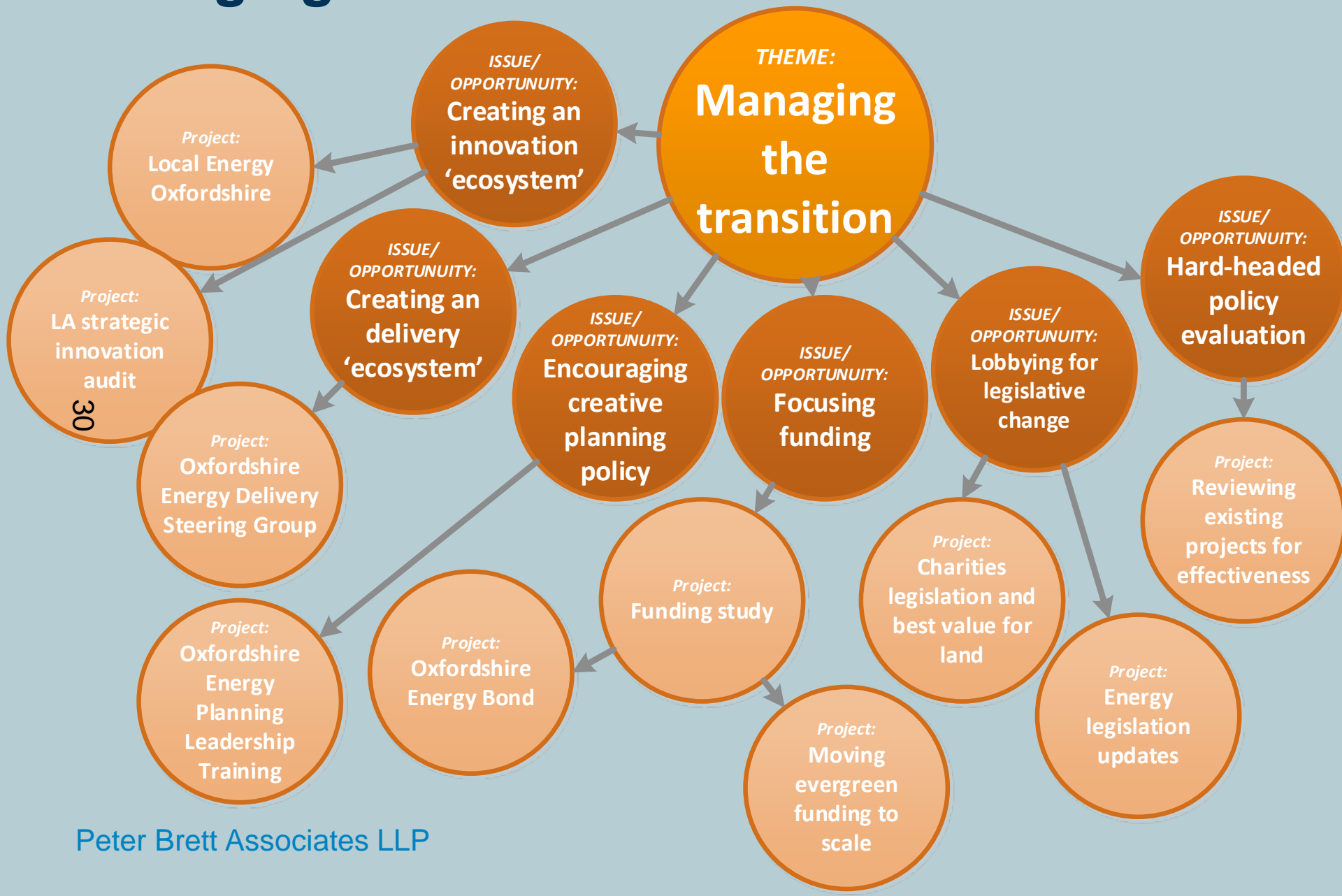
# Clean power generation



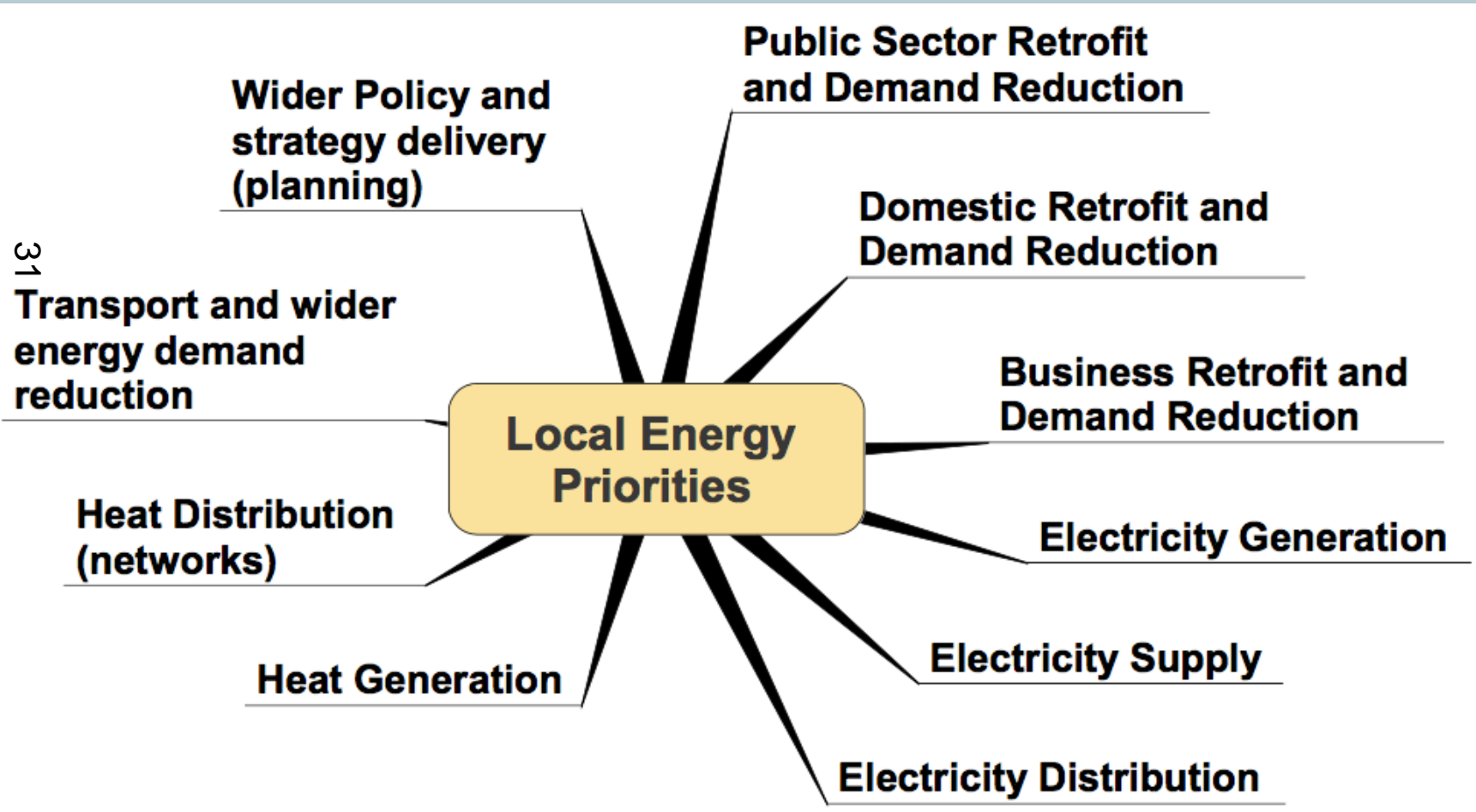
# Grid capacity for clean growth



# Managing the transition



# How will the South East Energy Hub develop, prioritise and implement these energy projects?



# The five key conclusions

- 1. Make planning more innovative.** The local planning system is a route to change.
- 2. Get the information flows right.** Energy Innovation Group /Energy Delivery Steering Group.
- 3. Go to scale.** how Oxfordshire can go to scale on existing mature technologies such as PV.
- 4. Follow the money.** The energy transition will require major investment in build costs and energy infrastructure.
- 5. Develop the coalition of the willing.** Help Oxfordshire to build on existing strengths to further develop community support for change.



# Oxfordshire Energy Strategy

## Questions / Discussions

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