



EUSEW HIGH-LEVEL POLICY CONFERENCE THE CHALLENGE OF ENERGY TRANSITION

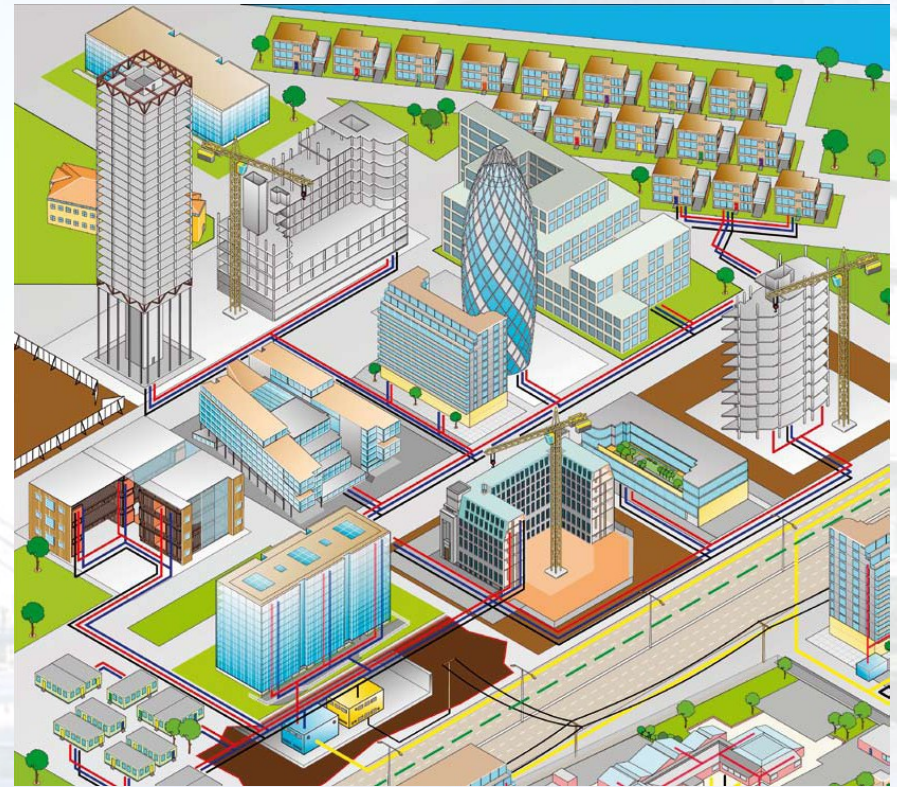
The Mayor of London's Decentralised
Energy Programmes of Work

25th June 2014

GREATER **LONDON** AUTHORITY

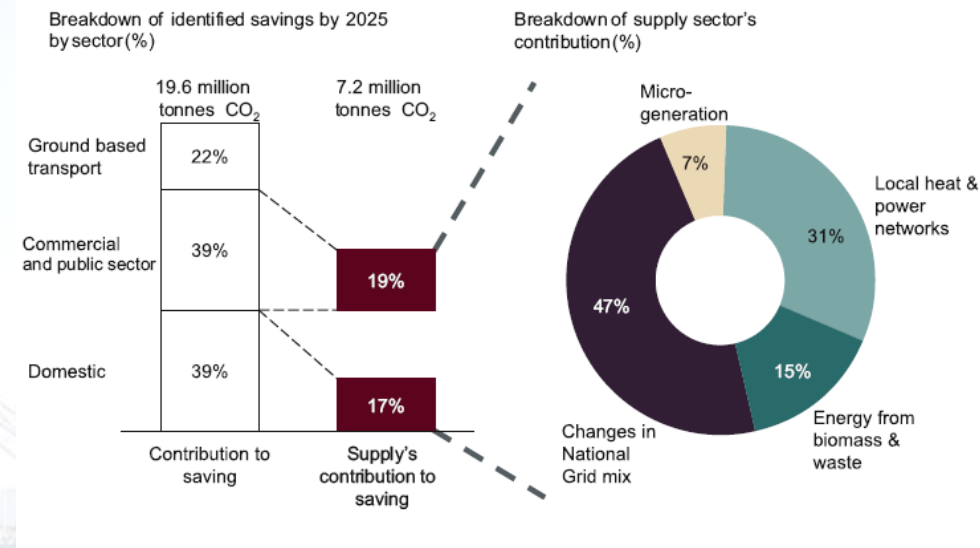
Reducing London's CO₂ Emissions

- 30% of London's CO₂ emissions are attributable to consumption of heat (mostly mains gas)
- Greatest opportunity for CO₂ reduction within London is to reduce demand for heat through building retrofit and low carbon, local (decentralised) heat supply.
- Decarbonising electricity supply is better placed as a national action (nuclear, wind, carbon capture and storage)



Mayor's Climate Change Targets

- An ambitious target for London for a 60% reduction in 1990 levels of CO₂ emissions by 2025
- Mayor's targets is to decarbonise 25% of London's energy supply
- Mayor's CCAP sets a target of 2.2 million tonnes p.a. of CO₂ emissions to be saved by 2025 through decentralised energy
- DE can deliver 12% of the CO₂ target and counts for 55% of 'committed Mayoral action'



THE MAYOR'S CLIMATE CHANGE MITIGATION AND ENERGY STRATEGY - OCTOBER 2011



DELIVERING LONDON'S ENERGY FUTURE

THE MAYOR'S CLIMATE CHANGE MITIGATION AND ENERGY STRATEGY
OCTOBER 2011

MAYOR OF LONDON

London's CO₂ emissions
reduction targets

Reductions based on 1990
levels:

- 2015 (interim target) 20%
- 2020 (interim target) 40%
- 2025 60%
- 2050 at least 80%
- 25% from decentralised energy by 2025
- An £8bn investment opportunity

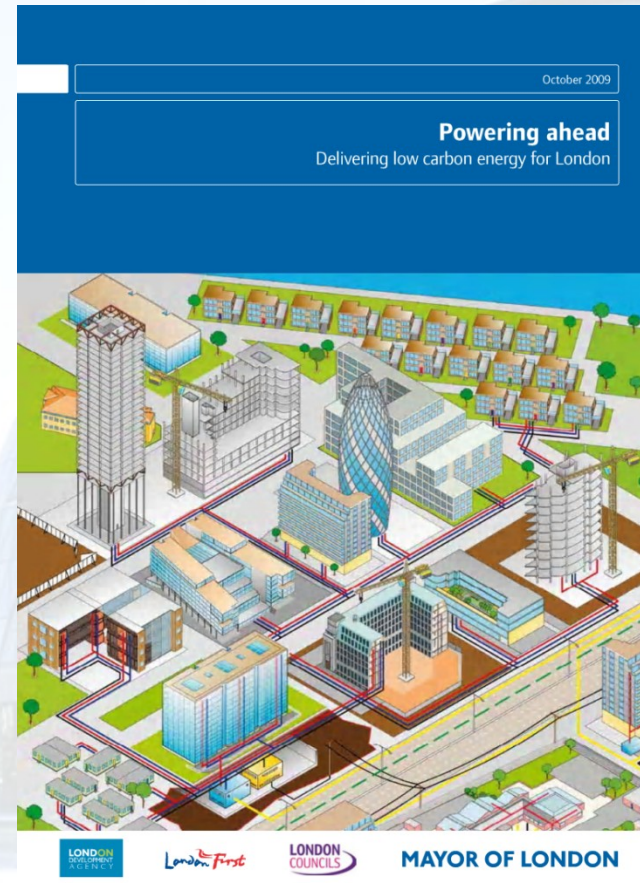
Delivering Low Carbon Energy for London

Annual CO₂ reduction of 3.5 million tonnes

Tenfold increase in generating capacity

National political will is creating a favourable policy framework for DE - changing investment environment

Public sector is working to remove barriers and harness the private sector's financing and delivery capability



Decentralised Energy – scale of projects

The generation of electricity local to demand and recovery of waste heat for building space heating and domestic hot water production.

Type 1 - Single sites

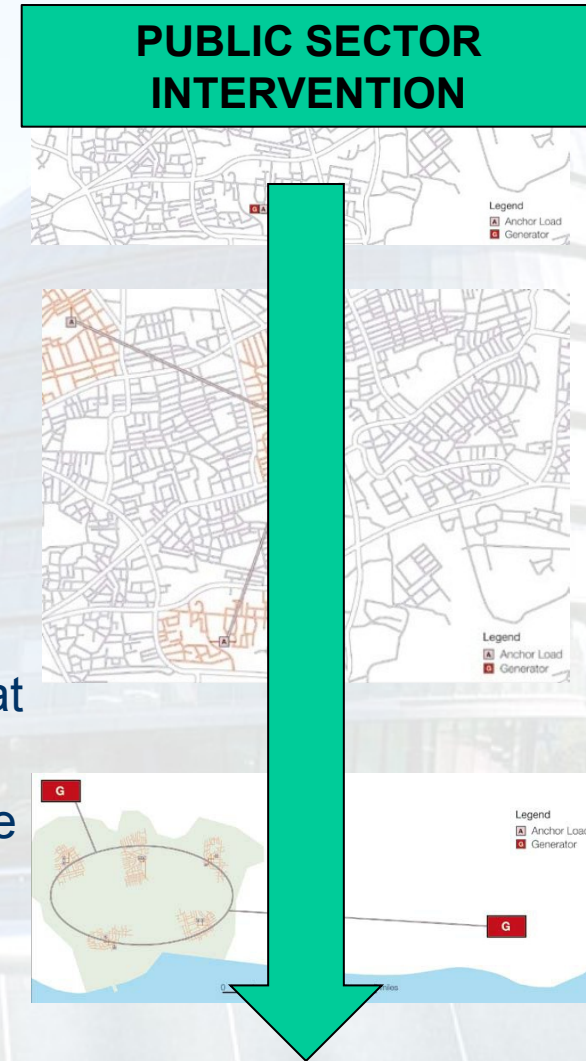
- Small/medium CHP up to 3MWe (<3,000 resi units)
- Capex up to £10m and a PBP ~ 5 years for commercially viable schemes

Type 2 - Multi-site mixed use schemes

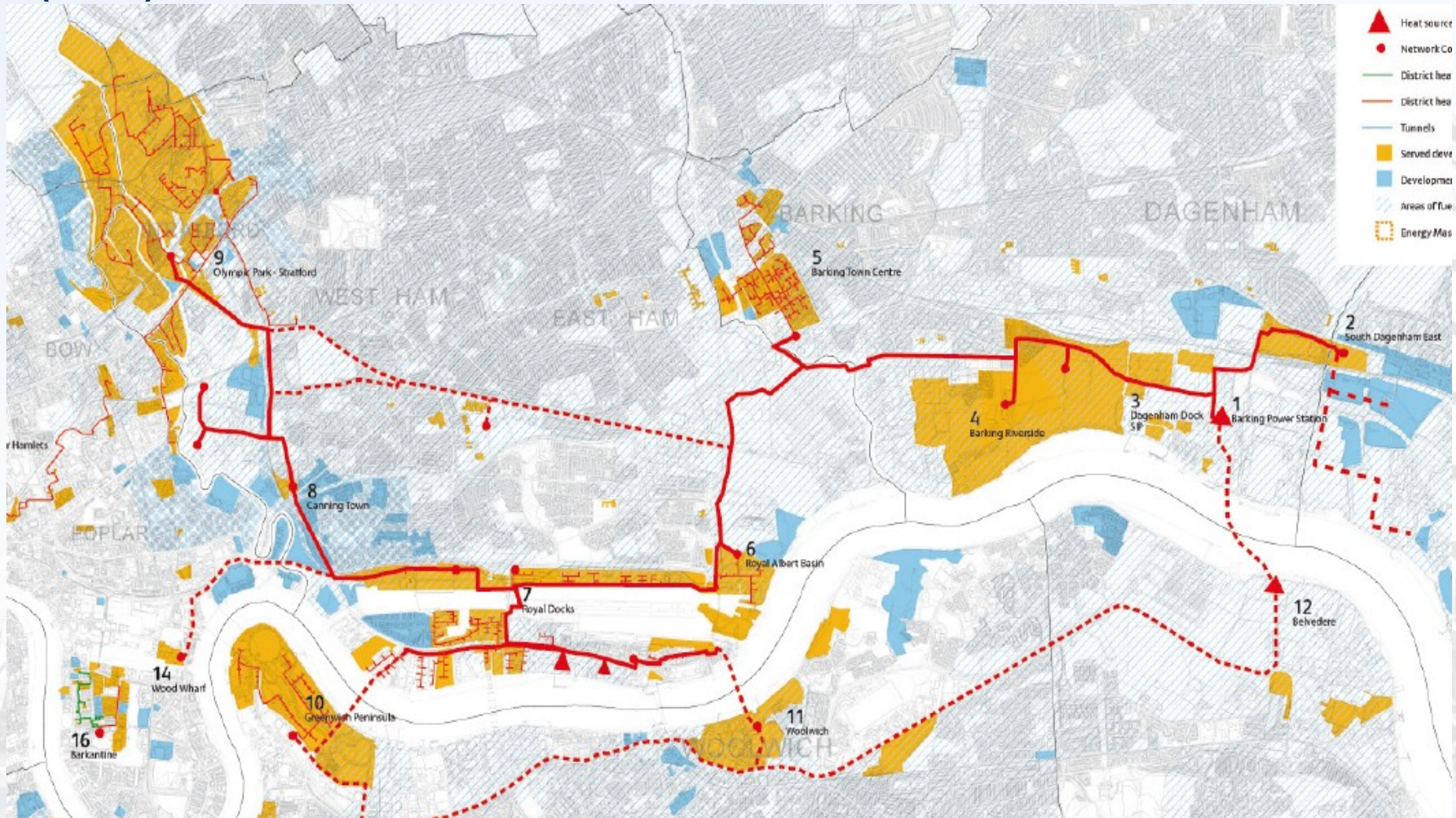
- CHP units 3 to 40MWe (3,000 to 20,000 resi units)
- Capex up to £100m and PBP ~ 10 years

Type 3 - Area wide heat transmission networks

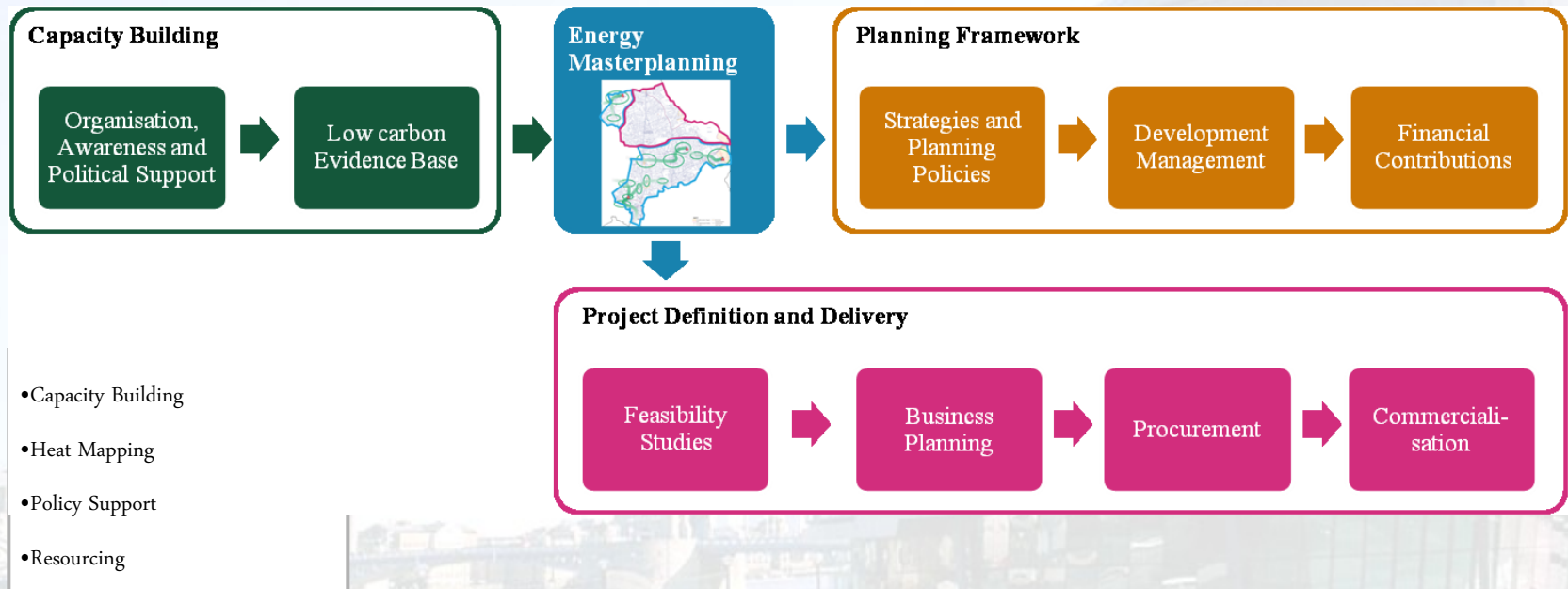
- Extensive heat pipe networks connecting multiple heat producers such as power stations, industrial waste heat or energy from waste facilities
- May serve 100,000+ residential units and a large range of mixed public and private commercial facilities
- PBP > 10 -15 years but with the potential for steady cash flow and utility type yields



How It All Started: The London Thames Gateway Heat Network (2007)



Decentralised Energy Development Methodology



The London Heat Map (www.londonheatmap.org.uk, 2011)

The London Heat Map is an interactive tool that allows users to identify opportunities for DE projects in London.

- It is owned by the GLA since 2011
- It builds on the 2005 London Community Heating Development Study
- It is in a user friendly format using an interactive GIS system
- It provides spatial intelligence on factors relevant to the identification and development of DE opportunities, such as major heat loads and supply plants, heat networks, DE clusters, OAPFs, etc.
- It is publicly accessible to anyone with an interest in DE

The heat mapping exercise has been completed for the London Boroughs in March 2012. 31 Heat Map reports are available for download.

The screenshot shows the website's header with the title "London Heat Map" and a navigation menu including "HOME", "ABOUT THE PROJECT", "HEAT MAP", "DE for London", "DH Manual", "RE-FIT", "FAQs", "NEWS", and "USEFUL LINKS". Below the menu is a "Log in" section with input fields and a "Go" button, along with links for "Register Now" and "Forgotten login?". A "Latest News" section features three articles with brief descriptions and dates. To the right, there is a "View the interactive map" button and "Contact details" for the Greater London Authority. A large, detailed heat map of London is displayed below, showing various heat load zones in different colors (red, orange, yellow, green, blue) across the city's boroughs. The map is overlaid with a grid and includes the text "MAYOR OF LONDON" in several locations.

Decentralised Energy Masterplanning Programme (2011)

The Mayor of London is providing financial and technical support to London Boroughs in the production of local Energy Masterplans.

Masterplans are developed to:

- Identify new DE opportunities in an area
- Set out a long-term vision for the heat networks growth
- Develop planning policies to promote heat networks and the connection of new developments to those networks

Masterplans must include:

- Phased construction of new developments
- Initial proposals for pipe routes and plant locations
- Outline economic and environmental impacts of their implementation

To date, 10 Energy Masterplans have been completed and are available to download at the London Heat Map website, whilst 5 are underway.

Area	Boroughs included	Area type	Energy masterplan undertaken	Energy masterplan in progress or planned
Upper Lea Valley	London Boroughs of Enfield, Haringey, Waltham Forest	Opportunity Area	✓	
Vauxhall, Nine Elms and Battersea	London Borough of Wandsworth, Lambeth	Opportunity Area	✓	
Wembley	London Borough of Brent	Borough	✓	
Kingston	London Borough of Kingston	Borough	✓	
Westminster	City of Westminster	City	✓	
Camden	Euston Area Energy Masterplan	Borough	✓	
Redbridge	London Borough of Redbridge	Borough	✓	
Kingston upon Thames	Royal Borough of Kingston upon Thames	Borough	✓	
London Riverside	London Borough of Havering	Opportunity Area	✓	
Wembley	London Borough of Brent	Borough	✓	
Bexley	London Borough of Bexley	Borough		✓
Haringey	London Borough of Haringey	Borough		✓
Barnet	London Borough of Barnet	Borough		✓
Greenwich	Royal Borough of Greenwich	Opportunity Area		✓
Islington	London Borough of Islington	Borough		✓

Decentralised Energy Project Delivery Unit (2011)

DEPDU provides technical, financial and commercial advisory services to help others develop and bring to market larger scale DE projects

- €3.3m funding (90% from the European Commission's ELENA technical assistance facility, 10% from the GLA)
- Private and public sector support
- Focus on heat network schemes supplied from CHP and sources of waste heat
- Targets: projects with total investment of £60.5m to market by July 2014 (leverage ratio 25:1)

To date the GLA has supported almost £40m of DE projects to market. The programme is actively supporting a pipeline of 18 DE projects, with a total investment potential of over £150m.



Co-funded by the Intelligent Energy Europe Programme of the European Union

Case Study – Gospel Oak DH (LB of Camden)

- Heat network supplied by waste heat from a new 4.6MW gas turbine CHP installation at the Royal Free Hospital
- 3.5MW GT heat recovery system, 1.3km heat network
- System supplies **existing** housing estates (~ 1,500 units)
- CAPEX: £5.7m
- Project commissioned in 2012
- CO₂ savings: 2,890 t/year
- DEPDU role: assist LB Camden with initial feasibility, design and energy supply contract preparation

