Implications of new London Plan for future energy strategies:
CIBSE 15/05/2019 by Matthew Turner, AECOM

Current Requirements

- Fabric:
  - Meet Part L 2013 TER (baseline) through fabric and energy efficiency measures alone
- Carbon target:
  - On-site target of 35% reduction on Part L 2013 TER from fabric and low and zero carbon energy systems.
- Carbon Offset
  - Zero-carbon target for new residential through further savings on-site or offset payment
  - **Default' offset price £1800/tonne (£60 x 30 years) but some boroughs have their own prices**
- Other requirements
  - Heating hierarchy
  - Priority for heat network infrastructure in key locations
  - Cooling hierarchy
  - Overheating assessments
  - Monitoring and reporting:

Draft New London Plan

- New London Plan draft for public consultation (December 2017)
- Public consultation December 2017 – March 2018
- Draft New London Plan showing Minor Suggested Changes (August 2018)
- Examination in Public currently underway
- Publication proposed for 'Winter 2019/2020'
- Already a material planning consideration and will gain more weight after EiP.

SI2 – Key Implications

- Fabric:
  - New minimum energy efficiency targets
- Carbon target:
  - On-site minimum CO_2 reduction **target stays at 35%** but change to carbon factor will affect routes to compliance
  - **Domestic AND non-domestic net-zero carbon target through on-site + offsetting**
- Offset:
  - 'Default' offset price proposed to change to £95/tonne over 30 years
  - Offset rules may allow off-site savings
- **Other requirements:**
- **'Be seen' requirement for monitoring & reporting of operational performance**
  - **Referable developments need to undertake lifecycle carbon assessment**
  - **Additional reporting requirements**
  - **Changes to overheating assessment for residential schemes**

SI3 – Key Implications

- New Heat Hierarchy promotes the use of secondary heat
- Suggests gas-**CHP unlikely to be suitable** in areas exceeding air quality limits
- Supports the use of CP1 and Heat Trust
- Supports low-temperature networks
- Local infrastructure requirements to be identified in energy masterplans

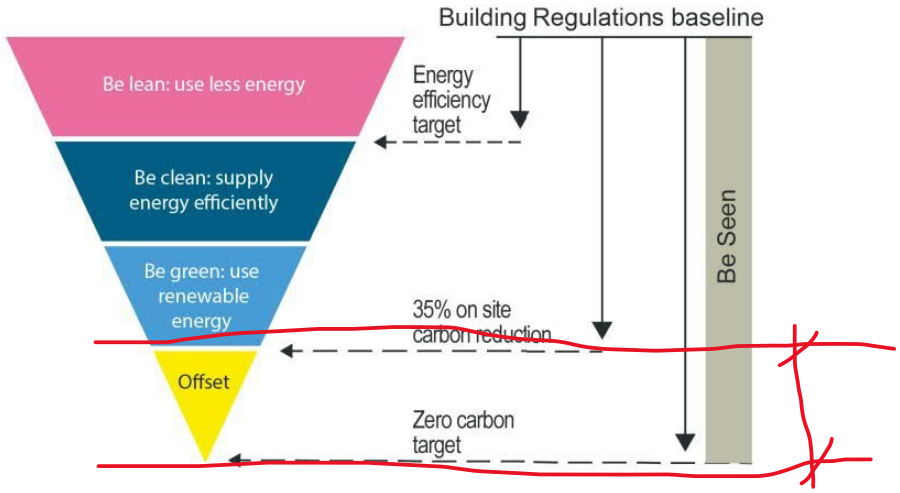
New Energy Guidance

- Update to the Energy Guidance published in October 2018
- Key changes:
  - **Encourages use of SAP10 carbon factors from January 2019 for referable applications**
  - "Any applicants proposing to use the SAP 2012 emissions factors should provide a justification for this"
  - Calculator tool will be published to show SAP 10 vs SAP 2012
  - "***Direct electric heating will not be accepted in the majority of cases*** *as it will not provide any on-site carbon savings in line with the energy hierarchy and it is likely to result in higher energy bills. Direct electric systems are also not compatible with connection to district heating networks"*
  - Makes reference to New London Plan FEE targets as stretch targets
  - Provides more detail on DH requirements
  - Makes reference to TM59 for residential schemes
  - Other minor updates and clarifications

SAP 10

- SAP 10 published but wont formally be enforced until new Building Regs come in
- Key change is carbon factor for electricity:
  - **Currently: 0.519kgCO2/kWh**
  - **Changes to: 0.233kgCO2kWh**
- Significant change to heat loss from heat networks
- **No new SBEM yet but likely to use same carbon factors**
- Timetable for new building regulations unknown but could be 2020/21

New Energy Hierarchy



Source: Greater London Authority

Fabric target:

Implications

- Likely to need to work towards the new targets for any new planning applications
- Applications after publication date will be expected to meet these targets
- Benefit in identifying a preferred standard approach
- Thermal bridging will be important so need to understand implications for different construction types
- Need to review design and cost implications of approaches
- Need to review supply chain implications

On-site carbon reduction target

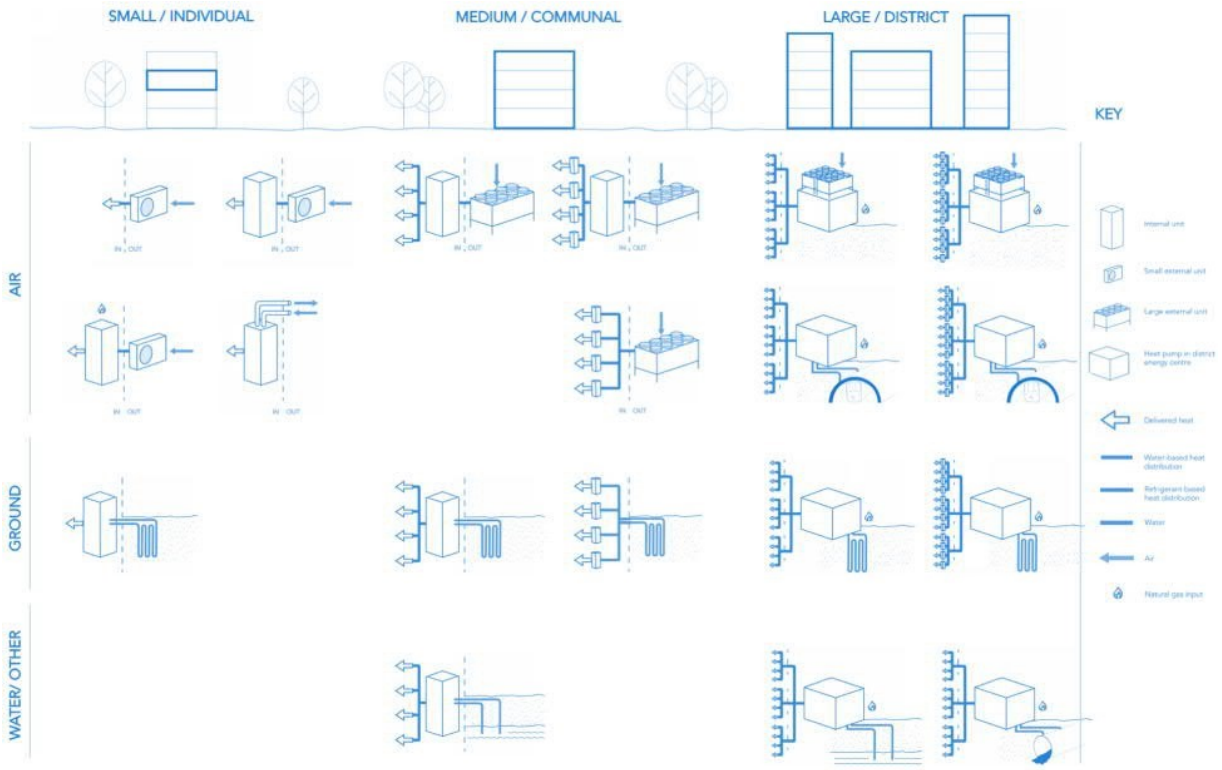
- On-site target to stay at 35%
- **However, big changes if using SAP 10 due to change in carbon factor for electricity from 0.519 to 0.233kgCO2/kWh (same as 90% eff gas boiler)**
  - Change to baseline
  - Significant shift in performance of heating technologies
  - Also affects savings from PV
- Other changes proposed but wont come into affect until new building regulations
  - Change to the heat loss assumptions from heat networks
  - Change to lighting energy calculations
  - Change to use of ACDs and thermal bridging default

9.2.5A The Mayor recognises that Building Regulations use outdated carbon emission factors and that this will continue to cause uncertainty until they are updated by Government. Further guidance on the use of appropriate emissions factors will be set out in the Mayor's Energy Planning Guidance to help provide certainty to developers on how these policies are implemented.

Future heating solutions

– Heat pumps
• Individual, block or network approaches depending on scheme and location
• Source – air/ground/water/waste/other
• New systems coming to market
• Low carbon saving now but get better with proposed new SAP methodology
• Capex and opex higher so need to address this
– Gas-CHP
• Carbon savings will reduce significantly with proposed new SAP methodology
• Harder to meet air quality standards, requirements may impact on system design and costs
• However can have positive impact on financial viability of heat networks
– Other
Very good fabric solution might allow alternative approaches

Heat pumps



Gas-CHP

Many of London's existing heat networks have grown around combined heat and power (CHP) systems. However, the carbon savings from gas engine CHP are now declining as a result of national grid electricity decarbonising, and there is increasing evidence of adverse air quality impacts. Heat networks are still considered to be an effective and low-carbon means of supplying heat in London, and offer opportunities to transition to zero-carbon heat sources faster than individual building approaches. Where there remains a strategic case for low-emission CHP systems to support area-wide heat networks, these will continue to be considered on a case by case basis.

Identifying the right approach

- Harder to have a standard solution for all sites
- The best solution will depend on the size, location and type of site and balance a number of issues:
- Compliance, Proximity to existing and planned heat networks, Local infrastructure constraints, Carbon, both now and in the future, Capital costs, Operational costs, Cost to residents, O&M issues, Security of supply, Long-term ownership and operation, Air quality
- Need to assess whether individual, block-based or site-wide systems are best
- Solutions could have significantly different affect on masterplan, building design, capex and/or operational costs
- Specific opportunities and constraints for each site will need to be assessed but likely to be some benefits in having a preferred approach for common types of schemes
  GLA will want solution to meet policy issues around carbon, air quality and running costs

Offset Costs

- GLA are proposing to increase the default price from £60/tonne to £95/tonne (over 30 years so £1800/tonne to £2850/tonne)
- Boroughs can set their own price but many seem to be adopting the default
- Potential to work with local authorities to look at alternative options for offsetting and help them to spend the funds

Offset Costs

- GLA has published guidance for Boroughs
- Covers setting up offset funds, identifying projects to fund and reporting
- Main priority of projects is to "reduce energy demand in existing buildings through energy efficiency measures and improving monitoring and operation"
- Other priorities include renewable electricity, renewable or very low carbon heat, support heat networks and whole building retrofit

- Refers to projects offering 'additionality'
- Proposes an approach to compare projects
- Sets out requirement for annual reporting

Monitoring and reporting requirement

The move towards zero-carbon development requires comprehensive **monitoring of energy demand and carbon emissions** to ensure that planning commitments are being delivered. Major developments are required to monitor and report on energy performance, such as by displaying a Display Energy Certificate (DEC), and reporting to the Mayor for at least five years via an online portal to enable the GLA to identify good practice and report on the operational performance of new development in London.

h. **a plan for monitoring and annual reporting of** ~~Proposals for how~~ energy demand and carbon ~~dioxide~~ emissions post-construction ~~will be monitored annually (~~for at least five years~~)~~.

Monitoring and reporting requirement

- **New requirement to monitor operational performance for 5 years after completion**
- Intended to address the performance gap
- Still to be determined how this will be delivered – GLA planning to publish more details
- Likely to be some kind of portal where data is uploaded and also refer to DECs
- Some boroughs already do this e.g. London Borough of Ealing

Overheating assessments

- Nondomestic still use TM52 and TM49 weather tapes
- However domestic will change to using TM59 which is more focussed on domestic risks
- Strategies to address:
    - Passive measures
    - Design of units – limit single aspect and enable cross ventilation
    - Façade design - % glazing
    - G-value
    - Window opening strategy
    - External shading
    - Internal blinds

Other new energy strategy requirements:

Whole lifecycle carbon assessment

Development proposals referable to the Mayor should calculate whole life-cycle carbon emissions through a nationally recognised Whole Life-Cycle Carbon Assessment and demonstrate actions taken to reduce life-cycle carbon emissions.

Operational carbon emissions will make up a declining proportion of a development's whole life carbon emissions as operational carbon targets become more stringent. To fully capture a development's carbon impact, a whole life-cycle approach is needed to capture its unregulated emissions (i.e. those associated with cooking and small appliances), its embodied emissions (i.e. those associated with raw material extraction, manufacture and transport of building materials, and construction) and emissions associated with maintenance and eventual material disposal). Whole life-cycle carbon emission assessments are therefore required for development proposals referable to the Mayor. Major non-referable development should calculate unregulated emissions and are encouraged to undertake whole life-cycle assessments.