THE ENERGY IMPLICATIONS OF 'STANDARDS' IN SPECULATIVE OFFICE DESIGN

DEMAND
DYNAMICS OF ENERGY, MOBILITY AND DEMAND

Why do modern offices, designed to the latest standards, often consume more energy than necessary? Our research, focussed on 10 post-2010 office projects, suggests that a degree of excess energy demand is being designed-in to the latest offices.

Our project, which is part of the DEMAND (Dynamics of Energy, Mobility and Demand) Research Centre (see www.demand.ac.uk), focuses on changing patterns of office life and on how office buildings are designed to support these activities. More specifically, we have looked at whether widely accepted standards of office design may be inadvertently leading to over-provision of major energy consuming systems in office buildings.

Key highlights from our research include:

1 Non-mandatory but hard to ignore industry norms (e.g., Grade A features and the BCO Guidelines) act as 'market standards' and have a crucial role in shaping the design, look and feel of contemporary office buildings.

2 These 'standards' lock together and lock in expectations of ever upwardly ratcheting service, resulting in over-specification and provision.

3 Lower energy demand (e.g. reflecting realistic rather than worst case peak loads) could be designed-in if 'market standards' were not followed. Additionally, such designs can be more attractive and productive than their market standard, 'plain vanilla' equivalents.

4 The potential for designing and developing lower energy offices is dependent on rethinking outdated assumptions about normal office work and tenant needs.

The key question that follows from our research is:
Can developers respond to the challenge of producing offices that accommodate a range of typical and likely needs, rather than a single set of requirements premised on 'market standards' designed to deal with extreme and unlikely worst case peak load scenarios?

'Chatham House' roundtable discussion: Your opportunity to get involved

We would like to have an open conversation about our research findings, focused on the problems and challenges that emerge from 'market standards'. With this in mind, we are organising a 'Chatham House' discussion in which individuals talk freely and in a non-attributable way. Developers, property agents, building designers and others involved in developing office buildings are invited to consider the challenges faced from different perspectives and how these might be overcome in the design and provision of commercial offices.

We aim to explore a range of different, radical, and potentially controversial approaches to developing lower energy office designs and servicing that meet users' real needs. The discussion, along with our research findings, will form the basis of a report for government policy makers and those involved in building development and design, documenting challenges and opportunities for low energy, market-leading commercial offices.

To help set the discussion agenda we have identified three key challenges, and outlined possible responses, all of which arose in discussions during our case study research. The Chatham House discussion will explore these together with the participants' own ideas and suggestions.

Challenge 1: How to avoid over provisioning: making 'more realistic' standards and specifications acceptable

The BCO's own research[1] suggests that more than 90% of buildings are occupied at less than 1:10m^2 and use less than 15W/m^2 small power, meaning the normal office is 'providing for the worst-case scenario, everywhere, from day one'.[2] We ask:

How can the lower end of the BCO range become acceptable?
How can the tendency to design to 'BCO plus' be addressed? Specifically:

- Could guidance (and those using it) focus more on specific office types? What are these?
- Does government regulation (e.g. planning law) have a role in challenging 'standards' (e.g. in encouraging lower-energy alternatives)?

Challenge 2: Occupant/tenant 'needs': how to close the feedback gap?

Interviews suggested that changing office work and therefore 'tenant needs', based on e.g. more informal office space and work, out-of-office working etc., are not represented in 'market standards' which tend towards homogenous, maximum, corporate expectations rather than diverse understandings of a 'Grade A' office. We ask:

How can market 'standards' better capture and reflect dynamics in office work and occupant 'needs'? Specifically:

- How can tenants' needs better inform 'market standards'?
- Can low-energy designs be made more marketable?
- Is there scope for systematic differentiation within the sector: not one size fits all?

[1] BCO (2013) *Occupier Density Study 2013*, BCO: http://www.bco.org.uk/Research/Publications/Occupier-Density-Study-2013.aspx, BCO (2014) *Desk Power Load Monitoring*, BCO: http://www.bco.org.uk/Research/Publications/Desk_Power_Load_Monitoring.aspx

[2] (BCO 2013: p6)

Challenge 3: 'Standards' blocking innovation – is there a new 'Grade A' model?

Low-energy office designs and services, e.g. using mixed mode systems, displacement ventilation, etc. are often dismissed early in the design process through unfamiliarity, perceived riskiness under peak loads, and departing from 'safe' Grade A space: the deep plan, brightly lit, four pipe fan coil office, with impressive lobbies, marble toilets and suspended ceilings. We ask:

How can this well-known conservatism be addressed? Is there any way that new 'standards' could be used to break out of the repetitive creation of safe, 'vanilla' offices? Specifically:

- Could new low-energy 'standards' be developed? Could 'standards' set upper limits for provision?
- Could 'standards' take into account the ability to retrofit for different (higher/lower) future energy uses?

WE HOPE YOU WILL JOIN US FROM 1630-1830 ON 28TH JANUARY 2016 AT THE BUILDING CENTRE TO DISCUSS THESE ISSUES.

After the event, all of those participating will receive a written, unattributed summary of discussions. The final report will be launched in mid-2016 and will capture the outcomes of these discussions to inform clear recommendations for enhancing low energy office design.

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