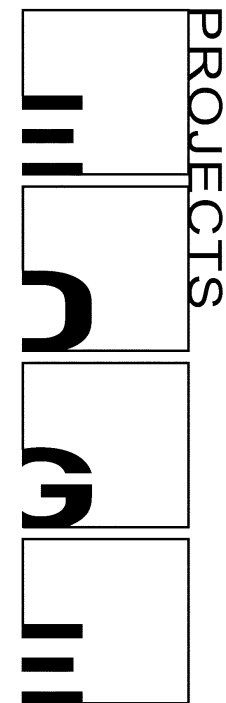


**First Thoughts on Carbon
Trust's Draft IGT Incentives
for Action – Non-Domestic
Building Sector.**

July 2010

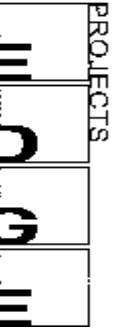


ABOUT THE EDGE

The Edge is a campaigning built-environment think tank and is multi-disciplinary in a landscape that is remarkable for the high number of single-discipline institutions it contains.

We have been described as a virtual institution. Started as a means of creating a shared space between the architectural and engineering institutions, the Edge was never going to fulfil this mission if it turned itself into yet another institution and squeezed into any space that is left. Instead we have existed as a voluntary group in temporary space with no staff and lots of stakeholders.

**FIRST THOUGHTS FOR CARBON TRUST ON *BUILDING THE FUTURE TODAY*
AND LCC IGT *INCENTIVES FOR ACTION - DRAFT MAY 2010***



Terms of Reference

At a meeting in July 2010, The Carbon Trust asked the Edge to comment on a draft section of the Low Carbon Construction Innovation & Growth Team's (LCC IGT) 'Incentives for Action Report' which it had co-authored.

The draft dealt with reducing carbon emissions in the non-domestic building sector. It had been informed by Carbon Trust's 'Building the Future Today' Report.

in particular, the Edge was asked to address the challenges presented by the commercial building sector. The draft paper identified the 'Landlord-Tenant Divide' as a barrier to progressing a low carbon agenda in this sector. It cited a 'Circle of Inertia' existed between the parties involved in funding, developing, constructing and finally occupying – with no one party minded to stimulate change.

It is hoped that this 'First Thoughts' document, which was prepared as a presentation, is sufficiently free-standing to be read without reproducing the documents it addresses.

**FIRST THOUGHTS FOR CARBON TRUST ON *BUILDING THE FUTURE TODAY*
AND LCC IGT *INCENTIVES FOR ACTION* - DRAFT MAY 2010**

Edge's focus, as briefed, is on the Landlord-Tenant divide.

But we have mapped other issues in BTFT and LCC IGT to reset metrics and re-sketch a backdrop that may influence the Landlord-Tenant divide in future.

NOTE

This presentation paper is a draft.

Consultation with Edge Members has not been possible in the timescale – so the paper does not purport to express the views of all Edge Members or all the views of Edge Members.

FIRST THOUGHTS FOR CARBON TRUST ON *BUILDING THE FUTURE TODAY* AND LCC IGT INCENTIVES FOR ACTION - DRAFT MAY 2010

DECs, EPCs and CRC

Rolling out DECs across the non-domestic sector is fundamental

Linkage between DECs and EPCs (and CRC and BREEAM and perhaps Building Regulations Part L) is also desirable.

Consider also combining EPCs and DECs into a single EPDEC certification *As tabled by Jim Green in recent RICS /Govt consultation meeting - jimgreen@envos.co.uk)*

Consider alongside kgCO₂ units, showing supplementary kWh units on DECs & EPCs - properly to record demand – before LZC measures are reckoned

Consider alongside ./m² divisor units, adding supplementary metrics (e.g., /occupant or per footfall or even /£ turnover – according to non-dom organisation type) – metrics of ‘business intensity’ - differentiating hard and soft carbon/energy users.

Consider whether other organisational CO₂ should also feature in DECs, EPCs or CRCs – e.g.,

- (a) **Embodied carbon** – deterring serviceable buildings from premature demolition and measuring the whole carbon impact of new replacement LZC development versus retrofit?
- (b) **Commuting Carbon** – deterring green belt development, promoting travel plans, etc;

Consider adopting a methodology like the Australian NABERS System – which provides some linkages and produces data in valuable configurations for feedback and with potential further uses – see on.

FIRST THOUGHTS FOR CARBON TRUST ON *BUILDING THE FUTURE TODAY* AND LCC IGT *INCENTIVES FOR ACTION - DRAFT MAY 2010*

DECs, EPCs and CRC /Cont'd

Adopt Australia's NABERS System (ref: Chris.Twinn@arup.com)

Founded in monitoring and labelling of existing buildings – it produces an EPC for a new or refurbished building in the form of a notional DEC (i.e. including default allowances for non-regulated carbon/energy)

It separately assesses energy uses in base-build/fit out/ special systems/operating hours, etc; & normalises them into a single kgCO₂/m² directly related to a star rating (equivalent to our EPC/ DEC rating')

It sets out a protocol for assessment, operating assumptions, etc; and advises on metering and data collection.

It starts as a simple front-end tool

(a)Understood by all - from Board Level downwards

(b)Directly influencing design – with target star ratings in the design brief.

And then crosses the design/operation divide – where transition between EPC and DEC is 'seamless' as hard data supplants default data and where discrepancies between predicted and measured can be interrogated.

It establishes a CO₂ performance rating specific to each building and the way it's used.

Its methodology has been adopted by Green Star (Australia's BREEAM) – so data sets are consistent (as is data base).

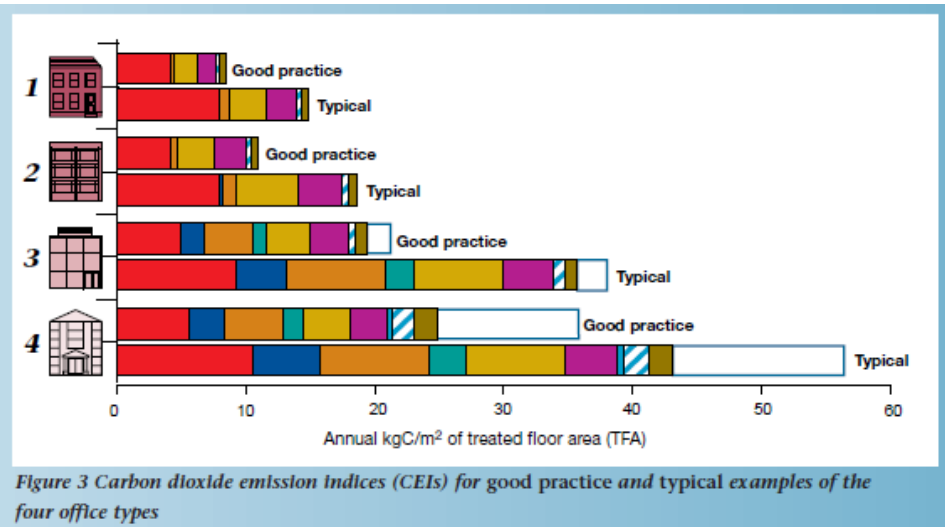
FIRST THOUGHTS FOR CARBON TRUST ON *BUILDING THE FUTURE TODAY* AND LCC IGT *INCENTIVES FOR ACTION - DRAFT MAY 2010*

DECs, EPCs and CRC /Cont'd

Adopt Australia's NABERS System – 2

Have we the data base to set it up?

We have some of it (e.g., Econ 19, the EuroProsper Work, etc; - Ref Bill Bordass bilbordass@aol.com).



We can acquire some of it – e.g., the non-climatic elements of NABERS .

We can sharpen the initial data base from metered results as the scheme develops.

**FIRST THOUGHTS FOR CARBON TRUST ON *BUILDING THE FUTURE TODAY*
AND LCC IGT INCENTIVES FOR ACTION - DRAFT MAY 2010**

Commercial Issues

Has Cost Effective Measure* used in BTFT been tested with the property industry?

“A Measure having a negative £/TonCO₂ abatement over its lifetime (upfront and ongoing cost offset by energy savings) using a 10% discount factor.”

Most developers/ investors look for a simple payback of <3 years. Some will set it at <1 year. Most will only accept a longer payback if failure to implement a measure jeopardises development.

But are there any price signals for carbon/energy? - what does BTFT assume as energy escalation?

Investors need to understand returns in terms of cost and other benefits
– see on.

FIRST THOUGHTS FOR CARBON TRUST ON *BUILDING THE FUTURE TODAY* AND LCC IGT INCENTIVES FOR ACTION - DRAFT MAY 2010

Landlord Tenant Issues

The Circle of inertia is a valid description of (most of) the market.

It distils as a consensus between participants that “tenants’ energy costs are not a material cost of occupancy”.

It defines all but the first-movers in office and related development – with the prime motivation for energy efficiency investment still being regulation. Once tenants are signed up there is no stimulus for a landlord to further upgrade – until break or lease end date looms.

The obverse is also true – that when “tenants’ energy costs are a material cost of occupancy” the Circle of Inertia is broken.

Tenant energy is a material cost (or a reputational cost) in some forms of retail – so the circle of inertia is less apparent in new (especially prime) development where new developer / landlord behaviours are apparent.

But all tenants’ will see energy as a most material business issue – under the heading of business continuity.

Organisations rely on uninterrupted and unrestricted grid energy availability. Almost none understands that the future promises neither.... (see on).

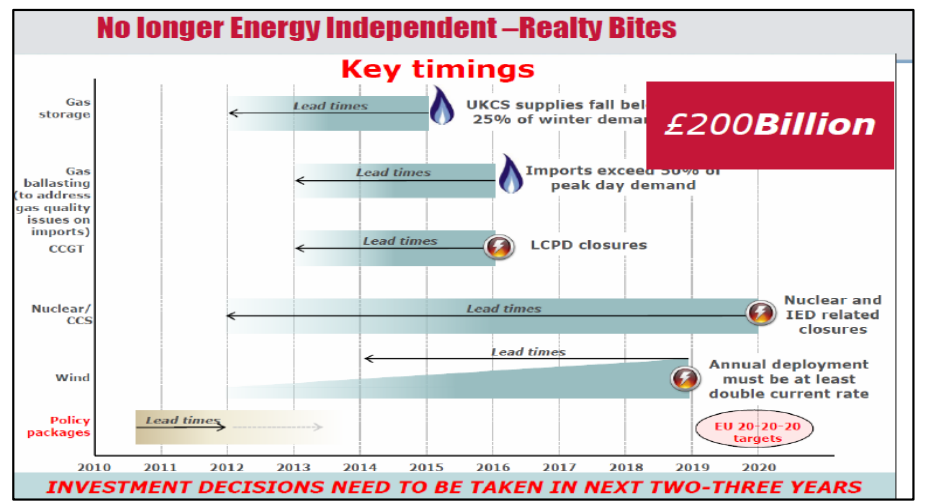
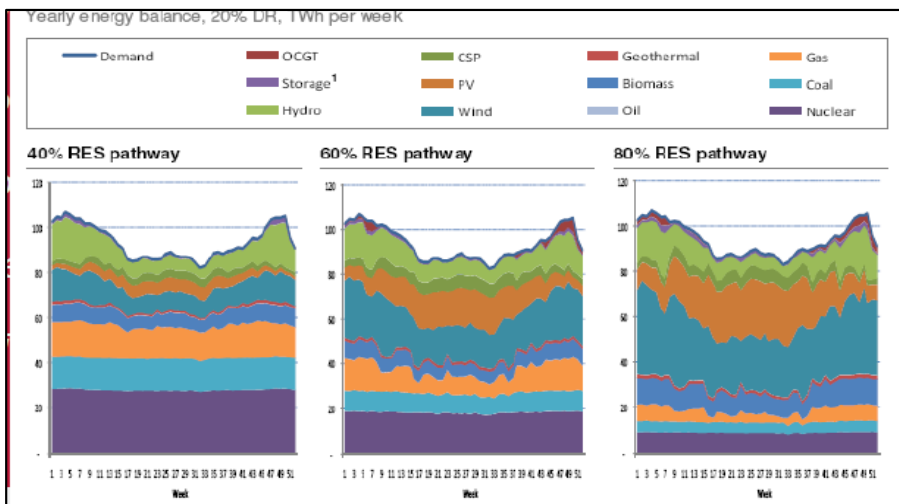
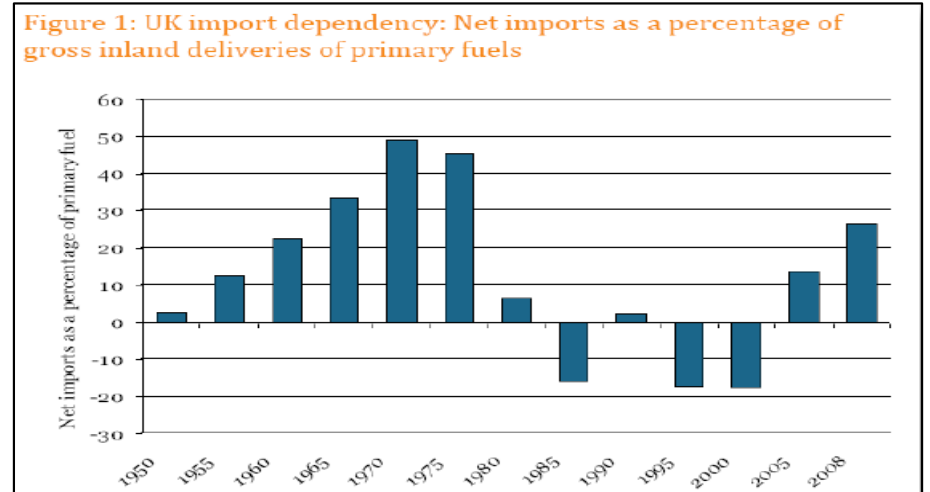
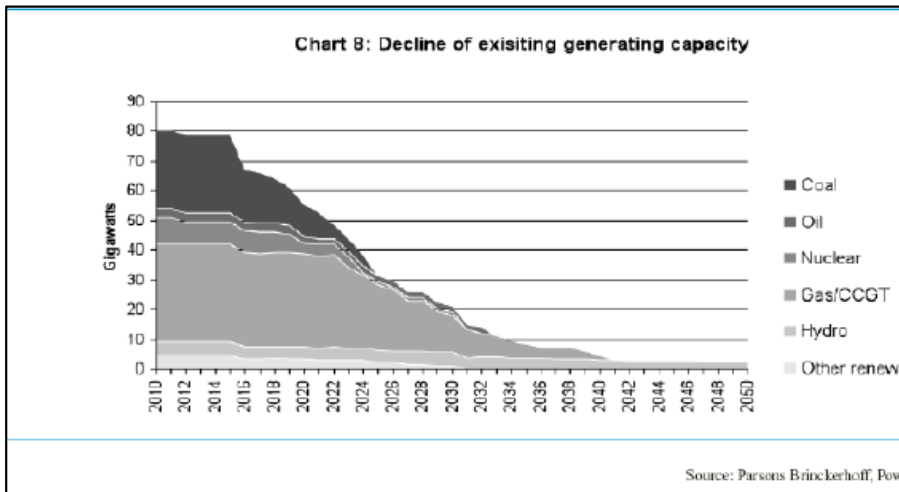
Grid energy interruption and business discontinuity is the missed ‘big ticket’ with Tenants – and will map straight to landlord, funder and contractor and onto building product. (Energy cost will increasingly manifest as a by-product of de-stressing the energy grids). – see on.

FIRST THOUGHTS FOR CARBON TRUST ON *BUILDING THE FUTURE TODAY* AND LCC IGT INCENTIVES FOR ACTION - DRAFT MAY 2010

Landlord Tenant Issues /Cont'd

'Business-as-Usual' for UK energy is over. Paradigm must be Reset.

....and there's plenty of reputable evidence.....



Courtesy: Prof. David Fisk - RA Chair Engineering for Sustainable Development; Imperial College, London.

FIRST THOUGHTS FOR CARBON TRUST ON *BUILDING THE FUTURE TODAY* AND LCC IGT INCENTIVES FOR ACTION - DRAFT MAY 2010

Landlord Tenant Issues /Cont'd

'Business-as-Usual' for UK energy is over. Paradigm must be Reset -2

....and there's plenty of reputable evidence.....

ofgem Promoting choice and value for all gas and electricity customers

PROJECT DISCOVERY KEY CONCLUSIONS

- Ofgem has recommended far reaching energy market reforms to consumers, industry and government
- An unprecedented combination of risks and challenges has combined to cast reasonable doubt over whether the current energy arrangements will deliver secure and sustainable energy supplies
- Prompt action will reduce risk to energy supplies, help lower costs to consumers and help progress towards climate change targets

WE DO NOT ADVOCATE CHANGE LIGHTLY IMPROVING THE INVESTMENT CLIMATE IS A KEY OBJECTIVE

ofgem Promoting choice and value for all gas and electricity customers

FEBRUARY 2010 – UPDATE ON SCENARIOS

	Green Transition	Green Stimulus
Key supply risk:	Generation variability	Generation variability
CO2 impact:	Down 33% by 2020	Down 46% by 2020
Impact on bills:	Up by 23% by 2020	Up 13% by 2020
Invnt required:	£194bn	£190bn
	Dash for Energy	Slow Growth
Key supply risk:	Gas import dependency	Deferred investment
CO2 impact:	Down 14% by 2020	Down 19% by 2020
Impact on bills:	Up 26% by 2020 (52% by 2016)	Up 19% by 2020
Invnt required:	£110bn	£95bn

ofgem Promoting choice and value for all gas and electricity customers

UPDATE ON STRESS TESTS - TRAFFIC LIGHTS

Stress test	Period	Today	Green Transition	Green Stimulus	Dash for Energy	Slow Growth
Re-direction of LNG supplies	1-in-20 severe winter	●	●	●	●	●
Russia-Ukraine dispute	1-in-20 severe winter	●	●	●	●	●
Bacton outage	1-in-20 peak day	●	●	●	●	●
No wind output	1-in-20 peak day	●	●	●	●	●
Electricity interconnectors fully exporting	1-in-20 peak day	●	●	●	●	●

Low impact ● Moderate impact ● High impact ●

THE "REDS" CONTINUE TO OUTWEIGH THE "GREENS"

Consumer bills set to rise by up to 60%; 2010-20.

All scenarios involve more risk of grid energy interruption than currently.

Cost determined by risk avoidance plan. Lower risk = higher cost = £200Billion (2010 to 2020)

**FIRST THOUGHTS FOR CARBON TRUST ON *BUILDING THE FUTURE TODAY*
AND LCC IGT INCENTIVES FOR ACTION - DRAFT MAY 2010**

Landlord Tenant Issues /Cont'd

A 60% rise in prices may start to make energy a 'material cost of occupancy' – but a 200-300% rise would be needed for full engagement.

The spectre of energy rationing (or quotas) with increasingly stressed energy grids as sanction against brown-outs would have immediate effect on rental market behaviour.

Few landlords or tenants know that in all scenarios network stress levels rise in the next decade.

They might then accept that a proportionate response would be to penalise those that most jeopardise the supply of grid energy and that make the greatest demand on investment in grid reinforcement.

Tariff structure reform could have the massive impact required.

A building (business) specific DEC – such as generated by NABERS – could provide one metric of quota. For example if all quotas were set at DEC F-rating, a G-rated building would suffer but a D rated building would have slack.

But an annual energy (CO₂) metric would need to be balanced by maximum demand criteria – base-load + peak. These will vary by application – a 24/7 business with integral data centre would behave differently to a 9-5 business with remote server farms. **MD criteria could form part of the NABERS style DEC –** initially as design stage projections based on defaults for different kinds of amenity and corrected with real MD data as it becomes available.

Energy bills could comprise [base-load (kWh) x base price/unit + peak kWh x Seasonal Time of Day price/unit + MD excess penalty charge] x DEC Rating Factor (<1.0 for DEC's lower than quota; >1.0 for DEC's over quota).

Consider a tariff structure to penalise energy profligacy and to reward probity to the extent of a 200-300% range in unit cost.

FIRST THOUGHTS FOR CARBON TRUST ON *BUILDING THE FUTURE TODAY* AND LCC IGT INCENTIVES FOR ACTION - DRAFT MAY 2010

Landlord Tenant Issues /Cont'd

We support 'CERTs' for SMEs

Energy suppliers are best placed to access SMEs. Variations of the Green Deal targeting SMEs might also be considered. In domestic sector CERTs delivered only lowest hung fruit - so such a programme has a shelf life.

We support mandating stock to be DEC F- rated by 2020

Tariff reform (sheet 10) would likely produce the same outcome quicker and deal with the issue of residual G or H rated stock at 2020.

Unforeseen consequences are a concern. E.g., whether serviceable buildings would be demolished and replaced prematurely by LZC buildings with high embodied carbon – with a step increase in CO₂ emissions. (sheet 3).

Allowing remedial costs to be set against business rates on unoccupied property would stimulate retrofit with increased capture of refurbishment by building regulations.

We support mandating Landlord/Tenant energy management plans

An 'active' NABERS style DEC coupled with tariff reform would likely see Energy Management Plans derived voluntarily.

We support mandating Green Leases for Government Offices.

Green Leases range from 'dark' to 'light' green – so direct benefits may be limited. The value lies perhaps more in market familiarisation.

We support verification of building regulation compliance and DEC checks.

An 'active' NABERS style DEC could be updated automatically by the energy supplier – as the basis of the following year's tariff. It would be the consumers' responsibility to explain discrepancies if they were material to tariff re-negotiation.

FIRST THOUGHTS FOR CARBON TRUST ON *BUILDING THE FUTURE TODAY* AND LCC IGT *INCENTIVES FOR ACTION* - DRAFT MAY 2010

SUMMARY.

- 1. We support the roll out of DEC's to the Non- Domestic sector as the most urgent priority.**
- 2. We urge closer linkage of DEC's to EPC's (also CRC and BREEAM and possibly Building Regulations) - all using a common 'whole carbon' methodology - along the lines of the Australian NABERS system**
- 3. We propose that DEC's ratings are application specific - along the lines of the Australian NABERS system - so that buildings that are used differently can be accurately compared on a common metric.**
- 4. We propose that grid energy supply tariffs are overhauled to penalise energy profligacy and to reward probity – to reflect that upcoming energy charges will levy repayment of capex needed for system reinforcement and de-stressing.**
- 5. We propose that DEC's are one of the determinants of restructured tariffs.**
- 6. We propose that the tariff system might see profligate energy use charged at orders of magnitude greater than 'best practice' use.**
- 7. We generally support all of the recommendations of the IGT *Incentives for Action* Draft but believe the type of DEC's and tariff systems we propose would yield many of its outcomes by voluntary action.**
- 8. We propose that CO₂ values used in EPC's and building regulation come to include embodied carbon when reliable data is available – so that the consequences of new build versus retrofit can be compared.**
- 8. We propose that full business rates payable on unoccupied buildings can be offset by reinvestment in 'legitimate' energy efficiency retrofit.**