New non-domestic buildings consultation
Sustainable Buildings Division, Zone 5/G10
Department for Communities and Local Government
Eland House
Bressenden Place
London SW1E 5DU

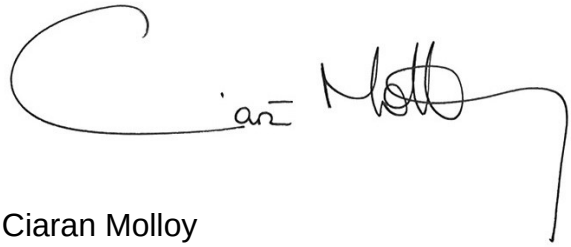
26 February 2010

Dear Sir/Madam,

Please find attached the Construction Industry Council response to the 'Zero carbon for new non-domestic buildings: Consultation on policy options' which was drawn up in conjunction with one of our members, CIBSE.

The Construction Industry Council (CIC) is the representative forum for professional bodies, research organisations and specialist business associations within the construction industry. It provides a single voice for professionals in all sectors of the built environment through its collective membership of 350,000 individual professionals and 25,000 firms of construction consultants.

Yours sincerely,



Ciaran Molloy
Policy Executive
Construction Industry Council

Zero carbon for new non-domestic buildings: Consultation on policy options (November 2009)

CIBSE / CIC RESPONSE

Q1 Do consultees agree that we should establish challenging energy efficiency standards for non-domestic buildings covering space heating and cooling, and measured on a kWh/m_2/year basis?

If not, why not, and what approach to setting energy efficiency standards would you prefer?

Yes	**X**
No	
Don't know	

1) In the domestic sector energy efficiency is actually primarily fabric energy efficiency plus a compliant boiler with the right SEDBUK rating (leaving aside the challenges of getting them installed correctly in appropriate systems and getting them controlled, operated and maintained correctly, all of which are important details but beyond the scope of this response).

In the non domestic sector, there is a broader picture to consider:

a) First of all, there is fabric energy efficiency through passive design measures and airtightness.

b) Then there is the installation of energy efficient heating, cooling, ventilating plant and other energy using equipment, such as lifts, escalators, and other fixed energy using systems.

c) Then there is reducing the energy demand of those systems through appropriate advanced control systems, occupancy related controls, operator training, facilities management, maintenance and operation.

This divides the lower section of the energy efficiency hierarchy triangle into three subsections. If we could actually do that on a slightly revised version of the triangle that would be good.

2) We agree that KWh/sq.m/annum is the preferred noramlised indicator for energy performance of controlled elemants of a building. However many of our members felt that the scope of Part L should be extended to include lifts and escalators.

The reason for favouring this indicator is that it should stop renewable energy technology, such as biomass boilers, being used to improve CO2 emissions on poorly performing buildings. . It is important that we focus not just on carbon, but also on actual energy use. The potential pitfall of going straight to carbon, is that it allows low carbon fuels to be wasted without restraint.

3) Our members did consider the use of kWh/occupant/annum as an indicator but recognised the nuber of variables that would lead to innacuracy and/or manipulation in this approach. At present there is no robust industry standard method of measuring occupancy in an auditable way, and this potential metric is therefore very open to abuse.

4) *We also agree in principle that a range of standards should be developed for different buildings. However, our members have concerns about how change of use or multi-categories within one building will be treated.*

   Our members believe that the floor area should be gross floor area (GFA). This makes measurment easier and more auditable. Owners try to maximise the occupied space in buildings and so the ratio of GFA to treated area is fairly consistent for different categories of buildings. The use of nett treated area would also exclude areas such as unheated storage and underground car parks that we believe should be included.

5) *We note that that paragraph 2.15 states that further consultation will be required before adoption of a metric. However we have the following questions as a taster of work that will be required before the introduction of a standard normalised metric*

   a)If kWh/sq. m/annum is adopted, consideration should be given to how shell and core buildings are dealt with. The indicator needs to reflect possible changes when additional controlled fittings are installed at fit out, possibly a couple of years after completion.

   b) If a building is designed and signed off in one category, but a recession like we have recently experienced makes it more attractive to let it as another type, how will that be dealt with post completion? There is an opportunity for gaming that would need to be closed.

Q2 Which of the three scenarios would you favour as a basis for setting on-site aggregate targets for zero carbon trajectories and why?

Off site rich	
Balanced	**X**
On-site rich	

1) *On site would be the ideal ambition, but there is recognition that there are physical and locational issues that constrain delivery of the required amount of renewables. There is also a point at which the cost can affect the viability of a project – e.g. solar PV film on the glazing in a tower blockcan deliver electricity but at a very high capital cost/sq m.*
2) *Off-site is the least favoured because of the risk of post completion market failure of a project, infrastructure transmission constraints that can change by the week, and the possibility of double counting emission reductions. There is a real need to ensure that off site contributions are truly additional, and that additionality is robust and auditable, and that if the development can be decoupled from that additional off site supply it will continue to supply within the UK.*
3) *The preferred option of our members is the balanced approach, but with weighting to ensure that the vaibility of on-site generation is fully expored and evaluated. We believe that the extension of the requirement to undertake feasibility studies under the recast EPBD may be a useful measure to support this aspect of the non domestic zero carbon approach.*

Q3 What views do you have on the impact of the costs of building to zero carbon standards in different sectors? How and why does sensitivity to new build costs differ between sectors?

1) *Practicing engineers know that the effort to achieve a zero carbon building varies very much depending on the nature of the development. Sometimes it can be done with reasonable effort and costs. But often it will require the application of significant additional resources.*

   This is subject to the law of diminishing returns. We can generally improve most systems in such a way that a relatively small additional expenditure delivers a relatively large improvement. As the quick wins are achieved it requires progressively greater expenditure to make further advances. We are on such a curve with the development of low carbon buildings – and we must seriously question whether it is realistic for all new buildings to be zero carbon, irrespective of the circumstances. In some cases we will achieve greater energy savings and carbon reductions by adopting measures to abate energy use and emissions in the existing stock. We believe that it is the intention for the "allowable solutions" element of the hierarchy to address this, but it is not yet sufficiently clear of the links between this element and the wider carbon reduction agenda for the overall building stock.

   We replace the UK building stock at a rate of roughly 1 - 2% a year. Even if all new buildings were to be 'zero carbon' from tomorrow, the impact this would make on emissions in the time scales to which we are supposed to be working would not be nearly as effective as improvements to the existing stock. Reducing CO_2 emissions from poorly performing buildings (eg a G energy rating) by 20% would produce equivalent savings to making an equivalent sized B rated building completely carbon neutral.

2) *Owners/occupiers*

   Some companies have freedom as to where they locate. Factors that will influence their decision include the local skill base, transport connections, lowest capital expenditure and largest grants/incentives. For them, any additional new build costs could make them look at alternative locations or refurbishing existing assets. Examples include corporate HQ, manufacturers, call centres and data centres.

   Others need to be close to their customer and their preferred location can change over 10 years. For example, supermarkets and logistic companies are location sensitive and need to be close to their customers or transport hubs.

   They need to build in a certain location and may be more inquisitive as to how technology can help them to keep construction and operational costs under control to keep competitive & maintain profits. However, if the costs are too high they may stretch the life of some existing assets beyond 2019 and avoid first mover learning curve experiences.

   Against this background, many companies will be unsure how other technologies such as home working and reduced customer interface may affect their business and property requirements. It may be that their preferred option is to speed up investment that removes the need for so much office space? This approach would provide greater certainty in costs for them and please shareholders, but it would not assist national objectives.

3) *Developers*

   Many property developers will only build when they have a pre-let lease signed. They have some ability to pass on additional costs but are still working to tight

development budgets. They have no concern over operational costs, and energy costs will be a small final detail in any agreement with the occupier.

Speculative developers will be much more cost sensitive as the cost of capital is an issue for them during the construction and pre-let phase. They have no interest in operational performance. There is a need to address the infamous landlord tenant divide in the implementation of the zero carbon policy for non domestic buildings.

Bearing the above in mind, it is vital that building owners and users are made aware of future predicted energy and CO2 costs to enable them to see the cost of a new low energy building, otherwise they are unlikely to see past the initial capital cost.

We would like to see publicly accessible indices set up at a very early stage to measure UK commercial building construction and operational costs against those of our major international competitors. This would ensure that throughout the transition process, the building control process does not set targets that are affecting the future prosperity of UK plc. Conversely, if running costs are seen to be outweigh any additional capital expenditure, it could encourage new construction from UK and overseas companies.

Q4 Do you agree that we should adopt the same measures and approaches for allowable solutions for non-domestic buildings as those for homes?

Yes	
No	**X**
Don't know	

Please refer to the discussion under the previous question about the relative costs of reducing emissions from new and existing buildings. Whilst CIBSE recognise that this is a consultation on new buildings, it is just not realistic to divorce the consideration of allowable solutions for new buildings from the refurbishment and emissions reduction in existing buildings. In some cases the most realistic allowable solution will be to undertake work on an existing building. For example, a new hospital block may be built to a very high standard of energy efficiency, but it is very likely to be far more cost effective to allow the refurbishment of another part of that estate as an allowable solution. The same could be said of universities and other educational estates, of the defence estate, and possibly in other cases. CIBSE members appreciate that a common approach will facilitate greater understanding and possibly improve the investment case for mixed use schemes. However, there are concerns over the differing ways that non-domestic building are financed constructed and operated.

There are also more opportunities for savings in non domestic buildings and a greater flexibility in design is needed to encourage innovation.

With reference to the suggested allowable solutions, we have the following comments:

1) Appliances

Some members considered that it is inappropriate for the construction industry to be responsible for the provision of appliances, particularly when occupiers could procure more efficiently through supplier agreements tailored to their business. The risk is that small power appliances installed at completion would be removed and disposed of during tenant fit out (maybe two years post completion) and this would

lead to waste that is larger than any energy saving. We believe that this is very likely to occur.

The nature of the appliances would also vary greatly between buildings, even of the same type. Would there be an approved list of standards for different small power equipment introducing more complexity?

It is considered that a more appropriate approach would be to legislate against the manufacture and sale of inefficient appliances in the first place. Indeed, this is the whole point of the Energy Using (now Related) Products Framework Directive. This addresses a very wide range of "appliances", including domestic white goods and a range of heating and cooling and ventilating equipment. We are not sure that the term appliances, which tends to be seen as a synonym for white goods, is appropriate for the non domestic sector. Energy using equipment might be a longer phrase, but is more likely to be understood by practitioners.

2) BMS

A well maintained and operated BMS will ensure optimum operation of plant and minimise CO2 emissions but the converse is equally true. A poorly managed and maintained BMS has the potential to increase CO2 emissions. An independent audit would be needed at regular intervals to ensure that where installed, they are operated effectively. This would be an additional burden on owners and compliance officers and require trained resources at a time when the market is already facing immense challenges. It would therefore be preferable that the application and correct operation of BMS systems is encouraged through CRC.

In any event, proper controls are a requirement of Part L, and are hardly an "allowable solution" in the non-domestic buildings market.

3) Export to other development (and import)

The proposal for export of low and zero carbon heat generation is welcomed, although the uptake may be restricted by development size and location.

If the criteria can be adopted to a development rather than a specific building, then the investment becomes more attractive. At masterplanning, export and import parameters could be set for each building that designers must then adhere to. However to make the whole system work, then buildings must also be rewarded for import.

With regard to location, the heat requirement for a CSH Code Level 4 housing estate located next to a non domestic building may be so small as to destroy any investment case.

4) Alignment of properties with allowable solution

The allocation of any off site allowable energy solutions to a property must be part of a properties deed that is transferred with the building on sale to prevent sold assets suddenly losing their Part L compliance. We see this as necessary, although it could face some legal challenges at a later stage. Planning agreements do not provide a life cycle guarantee that the allowable solutions will be maintained, as they are signed of in the same way as compliance certificates.

Q5 Are there any extra allowable solutions that should be used specifically for non- domestic buildings?

Yes	**X**
No	
Don't know	

1) *The proposal for allowing the offset of exported renewable and low carbon heat generation is welcomed, but CIBSE would like to see the inclusion of electricity generated from renewable sources. This may be more practical on some buildings. Combined with feed in tariffs, this could help to stimulate the adoption of PV and integrated wind turbines. where they are an appropriate engineering solution.*

   The inclusion of remote wind generation could also assist some companies like BT or the larger supermarkets who could locate a large wind turbine at some of their large remote locations and then use it to offset against future development. The restriction would be that the equipment must be located on a facility owned by the parent company (to prevent double selling) and the offset must be against proven rather than notional generation. (Please see comment under question 2 about robust auditable criteria for additionality).

   The wind turbine may then lose its ROC entitlement, but the market may decide that is a price worth paying.

2) *An "energy balanced building" approach should be encouraged and rewarded. An example is the recovery of heat rejected from one tenant's demise in cooling mode for use in another tenant's demise in heating mode. This is a solution that is rarely used because of management and service charge issues. But it could be applied to two buildings within an estate. Again, this may pose legal challenges to effectively implement.*

   VRV and water to air heat pumps are typical of technologies that can transfer energy around the building and the development of more systems should be encouraged. This is a low capital, high emission reduction proposal.

Q6 Do you agree with the proposal to introduce an element of allowable solutions for non-domestic buildings at 2016? What views do you have on the level at which this should be set, and the impact this will have?

Yes	**X**
No	
Don't know	

Yes, it would be useful to ease the industry into the new requirements providing:

1) Sufficient details of the allowable solution are available in time for the market to develop.

2) The early introduction of allowable solutions does not reduce the incentives for efficient and inclusive design of the whole envelope.

Q7 Do you favour an approach of setting a flat rate requirement above 100 per cent regulated emissions to account for unregulated emissions?

Yes	
No	

Don't know	**X**

The principle of including a percentage of unregulated energy is accepted, but the actual implementation could face difficulties. The level of unregulated energy in buildings is not the same across building types. This would need some further assessment to establish the relative costs of compliance with a flat rate approach. It could well penalise some, and let others off lightly.

If a CRC participant moves into a new building that has the extra improvement for unregulated energy catered for by off-site allowable solutions, how would that work? Would the participant need to record the extra improvement allowance in its annual emission report to the Environment Agency?

If it is required to include the associated emissions and purchase emission allowances, then the company would not be seeing the benefit of paying a premium for a green building. This could be counterproductive to what we are trying to achieve - i.e. green buildings carry a higher value.

If it is not required to include them, then how do you calculate the extra improvement figure? Does it stay fixed for ever based on the original design?

The principle needs some further thought so that it does not act against the market incentives covered by other legislation.

Q8 Would you favour the 10 per cent allowance, the 20 per cent allowance or another rate? Why?

Yes	
No	
Don't know	

it is inappropriate to commit to an answer here without the information referred to under Answer 7. Our members feel that there is insufficient real data on which to decide the correct figure. There is a need for further detailed research, possibly based on information gained from the building energy certification programme, before we could feel confident in setting an appropriate flat rate allowance.

Q9 Do you agree with the overall work programme we have outlined for the public sector?

Yes	**X**
No	
Don't know	

We agree with the programme, but consider it vital that the experiences of the programme are shared with the commercial sector. Some of our members thought the timescale should be brought forward.

The programme should be used to build expertise in the professions, build good regional expertise, and ensuring that excellent teams are kept together and not disbanded purely on the basis of lowest tender.

There should be a form of external audit of the process to ensure that the public and property industry have real confidence in the claimed achievements and delivered benefit. The results from this need to flow through as quickly as possible.

Q10 Are there other ways in which you think the public sector could usefully provide leadership for the move to zero carbon?

Yes	**X**
No	
Don't know	

1) *There was consensus that the public sector could take a more proactive role in establishing low carbon manufacturing and supply chains for the construction industry.*

2) *Schools, libraries and other community buildings with low annual occupational hours are usually surrounded by residential communities. These require most energy in the evening and weekends when the public facilities are closed. The public facilities can export their excess generation when not needed and this should be used to establish local energy networks providing more efficient use of generation assets.*

   The market needs new entrants to challenge the established energy providers at local distribution level. Promoting the export of heat and power from the fore-mentioned facilities may encourage new entrants to enter the energy generation and supply markets. The core facilities would then provide the stimulus for wider community energy intranets. Establishing energy intranets would also assists in the wider government strategies of competitive and secure energy markets.

3) *Local authorities could license local heat networks, giving sole access to areas for a defined length of time providing license conditions are not breached, and incorporating clear rules so customers are not exploited or left without energy supplies.*

   Local Authorities may also have the ability to act as brokers when heat distribution networks are being developed, but that would be outside the scope of a building control document.

Q11 Do you agree that the public sector should start trialling allowable solutions from 2015?

Yes	**X**
No	
Don't know	

Q12 What role(s) do you think local government can play in contributing to public sector leadership on zero carbon buildings?

1) *There is a huge need for openness and transparency about how to deliver these goals, not at the policy level, but at the detailed contractual supply chain level, and how to ensure that agencies such as building control are fully engaged in the process. This is a major challenge for the public sector and the industry. It is vital that the lessons learned, and the successes and failures of initial projects can be shared publicly, and that people do not hide tough lessons or failures.*

2) It woud help if the capital costs and operational data from the early zero carbon buildings were put in the public domain to give the transparency and confidence that the private sector needs when making major commercial decisions on where to invest.

3) Special exemplary council tax bands rewarding low carbon building may also assist the decision to construct these new zero carbon buildings. This fits with the principle that polluter pays currently used in taxation of road vehicles.

Q13 Does this package of measures and proposals for next steps address the key delivery issues to make progress towards the zero carbon ambitions? If not, what action is needed and by whom?

Yes	
No	**X**
Don't know	

1) The proposal is to introduce this through building regulations approved Document L. However there are currently ackowledged competence issues in some building control departments and we must be sure that these are addressed before adoption of such ambitious standards.

We also need to ensure that buidlings are built and signed off as designed, and that the documents remain with the building throughout its life. The log book that was introduced in ADL ((2002) should be enhanced to become a more comprehensive document. It should become a mandatory record of a buildings compliance during construction, at completion and post occupation. It should include sign off by a responsible person at each stage of a building design, and commissioning with up to date maintnenace records. Change of use and recorded energy use each year would be invaluable additional information.

The log book, either in paper or electonic format, must be available for inspection at the premise by any local authority person at any time. Civil penalties in line with CRC should be introduced for non-compliance

2) No matter how much time and money a property owner puts into emission reduction, the zero carbon building will depend on the person nearest the switch or thermostat rather than someone a hundred miles away. The potential for Display Energy Certificates to highlight occupant behaviour and show year on year improvement/optimum operation should be explored further.

3) We should ensure that our proposals are aligned with any EU member states that are considering similar ambitions. Duplication of effort should be avoided as it only leads to significant changes when the European Parliament starts to draft their own directives on zero and low carbon buildings, something that may follow logically out of EPBD2.

GENERAL SUGGESTIONS AND OBSERVATIONS

Q14 If you have any other comments on the proposals for zero carbon for new non-domestic buildings, please add them here.

1) It is accepted that you cannot improve if you do not measure and set targets, and the same applies to this proposal.

The modelling has many assumptions, each with the potential to affect the outcome. It is difficult for the market to have confidence on the current approach to what can be achieved. There needs to be more research on how

buildings really perform when occupied, where the energy costs are, and how they are performing in terms of kWh/sq.m/annum.

From this undisputable data, a realistic programme for effective emission reduction measures taking us to 2019 can be developed. The lowest hanging fruit can be picked first to make owners and occupiers aware of what can be achieved - but the ambition of zero carbon buildings by 2019 is one that should still be worked to.

The benchmarking process should also set up a common methodology that can measure realistic progress as new building are completed and occupied and remove the concept that this as a tick box exercise.

2) *It may also be beneficial to revisit the definition of a Zero Carbon building. The banker/fund manager that is investing and the company board that is reporting may not understand the difference between regulated and unregulated consumption. They may assume that is does what it says on the tin and has zero emissions which may not be the case. It may be that bringing ALL building services into Part L may help to clear up many misunderstanding as then it is a clean split between building consumption and business process consumption.*
3) *Any policies that are implemented as a result of this consultation must not overlap any other policies currently affecting property owners and energy users, e.g. CRC, ETS, ROCs, Climate Change Agreements, etc. Any hint of double action could alienate the people that will be facing the additional costs of implementation. If the benefits are not financial, then there should be no distortion of the facts and the total benefit of the ambition should be clear.*
4) *Care must also be taken to ensure that obligations are not placed on properties owners that have the potential to impact on liquidity. Property is a notoriously illiquid asset compared to equities, bonds and currency and further liabilities could outweigh properties advantage of long term return. Forcing a developer to adopt technology that significantly increases occupant costs could lead to the asset becoming less marketable.*
5) *HM Treasury may wish to form a shared risk consortium with major property owners to build a flagship zero carbon building by 2016. The building would have a pre-let agreement with a government department thereby assisting them to meet their objectives. This would reduce risk and also increase understanding of engineering, occupant perception/behaviour and value.*