Energy

Energy (for (add date) *or* in (Local Authority name))

Subsection of Energy Chapter. Introduction to the context national, regional and local, generally including paragraphs containing the following information;

Show present data; i.e. the % of the authority area's greenhouse gas emissions and the energy requirements of the local buildings that contribute towards this. Energy use in buildings accounts for nearly half of the UK's delivered energy consumption and over half of the UK's carbon dioxide emissions. Government Energy policy now recognises the role that energy saving and renewable energy technologies will need to play in reducing emissions of greenhouse gases and the UK's dependence upon fossil fuels.
Explaining sources of data etc

Introduce **Key objectives** i.e;

i. Strategy (climate change where applicable) /Vision/Local planning framework ensures;
   - All new developments are built to the highest standards of energy efficiency
   - Pre-existing developments are modernised and improved to achieve the new standards and targets for energy efficiency

ii. All new and an increasing number of pre-existing buildings obtain their requirements from localised renewables and efficient sources. *(insert set minimum targets with dates – may include ref to regional and national targets framework)* Target date for achieving city wide Carbon Neutrality (*where applicable see Newcastle)*

Highlight positive relationship between **prudent energy management and planning and the developer's and business communities** perspective i.e:

Reducing energy consumption and other resources during construction can result in lower direct costs for the developer, thus helping profitability. Low energy buildings not only reduce energy costs, but also improve building performance reducing damp and/or condensation; which may be expensive to remedy retrospectively and causes significant expenditure for Social Landlords. Damp has historically been a principal factor in properties remaining empty.
Lower energy buildings increase the sellability of a development, as low energy consuming homes and business incorporating renewables technologies have a marketable advantage on competitors when buildings are sold or let i.e;

- Domestic perspective: - costs of mortgage in an inflated market can be balanced against lower monthly outgoings in other areas such as utility costs. Research surveys carried out by CABE, the WWF and the Halifax (July 2004) found that 84% of people would be willing to pay an average of 2% extra on the purchase price their home if they are environmentally sound and 87% of buyers want to know if their homes are environmentally friendly (see cabe.org.uk).
- Lower running costs in business premises reduce overheads, thus supporting maintenance or improvement of net profitability.
- Landlords as potential purchasers of new developments or improvers of existing stock will be increasingly competing with the market advantage in letting low energy buildings. Already the case in the student rented sector nationally.

Highlight importance of adapting to meeting and competing in a **rapidly changing and increasingly regulated market:**

- The once small or specialist 'green' consumer market, has rapidly mainstreamed due to popularisation of the issue – programmes such as BBC2 'No Waste Like Home', newspaper and journal articles on climate change etc. This sector of the market will soon predominate and is prepared to pay a premium for buildings that have been designed to 'green' specifications and leave anything less empty.

- As the domestic market has changed businesses are developing a parallel awareness of the marketing advantages of their own business premises, practices and products having a transparent and measurable 'green image'.

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Introduce importance re **Public Sector Buildings**: Increasingly Local Authorities are aware of the consequences of high energy, the legislative framework requires much more from them to reduce energy consumption and CO_2 emissions. The public sector is inevitably choosing buildings designed to the lowest achievable energy specifications. Developers are wise to plan ahead of the legislation ensuring when legal requirements come into force they can be achieved with minimal confusion and cost.

Introduce importance re **EU Directive on Energy Performance of Buildings:** Directive 2002/91/EC of the European Parliament and Council, on the energy performance of buildings, must be adopted into UK legislation by January 2006. It will greatly affect awareness of energy use in buildings. The legislation will affect all buildings, both domestic and non-domestic.

In brief, the directive aims to improve the energy performance of buildings by requiring:

- Methodology to calculate integrated energy performance of buildings.
- The Energy certification of buildings
- Energy minimising requirements must be met in new buildings. Those buildings with a useful floor area over 1000 m2 must formally consider to the following alternative systems for heating:
  - CHP
  - District or block heating or cooling
  - Heat Pumps
  - Local energy supply based upon renewable energy
- Existing Buildings; large existing buildings being renovated must reduced energy requirements, buildings with a total useful floor area of over 1000 m^2 undergoing renovation must upgrade energy performance.
- Boilers and of air conditioning systems must be regularly inspected.
- Energy Performance Certificates: whenever a building is constructed, sold or rented out, a certificate detailing its energy performance must be made available to the prospective buyer or tenant.

Energy, the Local Economy and Community Well Being

Subsection of Energy Chapter introducing subject relations containing the following information;

Fuel Poverty: Give estimated Statistics for the (Authority/ Region) suggest (number) deaths each year related to fuel poverty. Homes built by previous decades of developers who didn't need to consider the effect of poor thermal efficiency or increasing running costs on the home occupier, or whether or not a household can afford to keep warm and cook, are a significant factor in increased likelihood of illness in their occupants.

Security of Supply: National self-sufficiency in gas is due to end in 15 years and international oil reserves are precarious, - with predictions by oil industry insiders that Oil and Gas reserves may well be reaching or have reached their peak - there are predicted rises in fuel costs across the fossil fuel spectrum . Many dwellings constructed to current Building Regulation standards will not assure the provision of affordable energy for future occupants. (*see also where applicable the Local Authority Fuel poverty Strategy & Action Plan; Hyperlink to web versions)*

Dwellings constructed to the highest standards will ensure current developers are viewed positively as rising fuel costs expose other property developers to accusations of ignoring scarce fuel supply.

Local Economy

Lowering the running costs of our local housing will lead to a net increase in local disposable income of householders, a large percentage of which will be spent in the local economy.

Reducing the running costs of our business premises, will increase profitability and the money available for expansion and job creation. Increasingly new businesses will want to locate to areas guaranteeing the best energy minimisation, local development must ensure a high competitive edge if we are to improve inward investment.

The newly mainstreamed domestic 'green' consumer is being drenched in awareness of the benefits of eco-design not only in terms of lower impact on the environment but financial benefits and quality of life. Their expectations are now beginning to exceed minimum future standards set and our local economy must rapidly adapt to meet these demands.

Being able to record that goods have been produced using sustainable energy will soon be as important a sales or marketing feature as the now common place 're-cycled', 'fair-trade' 'organic' or 'without cruelty to animals' logos. Being able to market homes as low utility users integrating renewable energy sources will be parallel to the marketing benefits of electrical goods rated high efficiency.

Forward thinking developments will raise the profile of the *(local authority area)* increasing its attractiveness to investors and new residents alike.

Low Energy Building

Subsection of Energy Chapter introducing design and build considerations incorporating the following guidance;

Minimising demand and maximising efficiency.

Future building must aim to minimise the energy consumption of business and domestic property whilst maximising the efficiency of energy usage. The relationship between buildings and the local microclimate can reduce the amount of energy required for heating. In addition buildings must be designed to incorporate maximum sourcing of their energy requirements sustainably.

In order to achieve these objectives architects, designers, planners and builders must demonstrate an understanding of micro-climate, relational positioning, spatial thermal dynamics, solar gain and renewable energy sourcing and installation.

Site Layout:

Working with Prevailing Wind Conditions and Shelter: Shelter from the wind reduces wind chill experienced around buildings, the amount of heat required to bring the internal temperature of buildings to thermal comfort and heat loss from air leakage.

To build in wind considerations and shelter principals, buildings should be;

- Orientated with the narrow end of the building to the prevailing wind (include *usual compass bearing direction based on local climatic data*) to reduce exposure.
- Spaced in open or garden settings in groups of buildings around 6 times their height apart to maximise the sheltering effect (although this must be balanced with the thermal massing benefits of higher density developments)
- Planned to incorporate the planting of shelterbelts of trees with growth attainment to the height of the building and at a distance from the building of between 1 and 3 times the height (consideration must be given to avoiding the overshadowing of passive solar elements)

- Designed to reduce the surface area exposed to cold winds; i.e. by having a low roof on the north-east side or by sheltering the exposed side by building up or partially burying with earth-banking.
- Might incorporate courtyard layouts, glazed communal courtyards and walled gardens to create interior to exterior bridge spaces and enhance external spaces.
- Influence the microclimate by using climbing plants to cover unearthed walls extending the boundary layer of warmer, less turbulent air around the building and reducing heat loss.
- Considered in respect of the installation of small to medium scale wind turbines for individual or community electrical generation.

Maximising Solar gains: Sunlight is a free, constantly renewed source of light and heat, so its benefits should be built in. Design incorporating elements to maximise passive solar gain significantly reduce the amount of heating required to achieve and maintain thermal comfort. Converting available sunlight into heat and power reduces the reliance on fossil fuel sources and increases the long-term economic viability of the building.

To build in solar gains, buildings should be;
- Orientated with the main elevation or face of the building to within 30 degrees of due South
- Spaced to ensure buildings structures, shelter break planting and high walls don't overshadow. Note, however, that the planting of native deciduous trees to reduce overheating in summer whilst minimising shadowing in winter should be considered.
- Incorporating a greater proportion of glazed areas on the southern elevations to increase passive solar gain and natural day lighting.
- Using roof lights and atriums to bring light and solar heat into the centre of buildings.
- Incorporating photovoltaic panels, cladding or roof tiles into the buildings design. For maximum efficiency, solar panels should be mounted on a south facing roof at a 30° angle with the horizontal and away from any shadows from trees, surrounding buildings or chimneys.
- Incorporating solar water heating collectors.
- Incorporating Ground Source Heat pumps; as ground source heat pumps extract sunlight energy absorbed into the earth for space heating, the energy source, strictly speaking, is solar.
- Aiming for Zero CO_2 Standard; the point at which you can obtain all your heating from passive solar gains and internal gains from the occupants.

Structure: Energy-efficient buildings minimise heat losses through the building envelope, i.e. the roof, walls, floors and windows, minimise heat losses through air leakage, whilst maximising heat and light gains from the sun.

To build energy efficient structures, buildings should be;
- Incorporating substantial roof insulation, preferably that goes beyond the building regulation minimum requirements eg. 400mm should be used in roof spaces.
- Built using dense construction materials which encourage the storage of heat and slow release over a period of time reducing the heat required to maintain thermal comfort.
- Incorporating bulk massing to high densities into the buildings fabric and through wall, floor and roof insulation using materials from sustainable sources such as wool and loose cellulose fibre from recycled newspapers, cork, and wood fibreboard.
- Using advanced solar and double glazing systems for windows and doors; preferably framed with sustainably sourced wood.
- Avoiding and eliminating the creation of thermal bridges (ie non or poorly insulated parts of the construction including areas where high conductor materials span the interior to exterior) at design. This can significantly affect the overall performance of the building.
- Minimising automatic air leakage and ensuring ventilation is controlled (condensation can be prevented in buildings with low uncontrolled air leakage by providing adequate heating and controlled ventilation).
- Designed to reduce the number of exposed external surfaces or by being compact – usually cubiform structures.

- Including deep roof overhangs to help reduce heat loss and shelter the walls from rain.
- Avoiding the need for mechanical ventilation through the use of passive stack ventilation systems, or in cases where this is not possible mechanical systems establishing 70-90% heat recovery.

Consider Including a Local Case Study Hyper Link or Exemplar Project reference:

Interior Building Layout and details: The layout of a building can significantly impact on the energy required to heat the space to thermal comfort or optimise light.

Energy efficient layouts and interior details;

- Have the lowest ratio of exposed external surfaces to internal space i.e. compact – usually cubiform structures.
- Use dense construction materials within the building and on the internal side of door, wall and roof insulation; such materials store heat and release it over time reducing the overall heat required for constant thermal comfort.
- Situate high occupancy or daytime living rooms towards the naturally lighter and warmer southern elevation of the building.
- Situate Kitchen space towards the Northerly side to reduce overheating from appliances and reliance on energy using air conditioning in summer.
- Create intermediate zone 'air lock' spaces such well sealed porches or lobbies, between the warm inside of a building and the cold outside.
- Include sunspaces such as conservatories and or glazed verandas to improve solar gain during the day. These should be constructed so that they can be thermally isolated from the rest of the building as part of the whole structures temperature regulation.
- Provide clothes drying space for natural drying internally or externally (i.e. clothes-lines, rotary clothes line in a garden and a utility room with a drying rack) to reduce reliance on energy consuming tumble driers.
- Designed incorporating individual or community biomass systems for space and water heating supplementing other onsite renewables already discussed.
- Include high standard well insulated pipework and hot water storage systems
- Include good heating and lighting controls. This may include thermostatic radiator valves and movement to light sensors in residential units to sophisticated Building Energy Management Systems in larger developments.
- Include the Installation of intelligent metering systems

Consider Including a Local Case Study Hyper Link or Exemplar Project reference:

Appliances: The efficiency of appliances used in buildings can dramatically alter the buildings energy consumption, particularly in the case of new or refurbish for sale developments consideration should be given to integrating the most efficient appliances as part of the package. This should include things like lighting systems running on only energy efficient bulbs only, high efficiency rated washing machines etc and low water use systems (taps, showers, washing machines.

Consider Including a Local Case Study – Horsman Ave, York - Hyper Link or Exemplar Project reference:

Site Size: The systems used by buildings to provide heat, cooling or power can significantly alter the occupiers main source energy requirements.

Sources of energy and how they are used, controlled and maintained, will impact upon the layout of the building and should therefore be key design considerations at an early point in the projects development.

The approach taken to single developments or modernisations may be significantly different to that of larger sites which maximise opportunities to create and connect to Community Heating Networks. Developers of larger sites should automatically show consideration proposals to develop or expand Community Heating Networks providing a highly efficient and renewable source of energy. The site layout may affect the feasibility of connecting to existing and/or proposed Community Heating Networks. Considerations should include the length of any connecting infrastructure and any potential physical barriers.

Developers working areas of mixed-use or large scale development unsuited for, or unable to connect onto, a Community Heating Network should consider installing Combined Heat and Power plant to ensure higher efficiency in fuel use.

Lighting Schemes: Developers working medium to large scale sites and smaller sites where practical should consider using solar street lighting and solar lighting for bus shelters or other similar community facilities. External lighting is an important design consideration which needs careful planning at the start of a project.

Well designed schemes for lighting benefit community safety whilst enhancing architectural and landscape features after dark, thus adding to the marketability of developments. Schemes should not contribute to light pollution and its negative impact on amenity, clarity of the night skies or wildlife, and the energy required for the lighting itself should be from renewable sources. To begin minimising the environmental impact of external lighting schemes developers should ensure:

- Lighting levels are the minimum necessary to achieve safety and enhancement objectives;
- Energy is photovoltaic or renewably sourced
- Energy efficient lamps are used;
- Uncontrolled floodlighting should be avoided and all light fittings should be shielded to minimise any light pollution;
- Particular care is taken to apply the above guidance with floodlighting schemes for sports pitches or late night shopping or leisure amenities complexes as these have historically been high light polluters and high energy consumers.

Sustainable Sourcing:

- A minimum of (x%) of a buildings energy use should be through on-site generation from renewable sources, remaining electricity requirements should be through a green tariff with an energy supply company.
- Where possible, connect to a community heating network that guarantees requirements are met from a renewable source; e.g. locally sourced biomass.

Energy Standards, Policy and Legislation

Subsection of Energy Chapter introducing policy framework containing the following information;

Local Context

The (*Local Authority)* (*add where applicable* Energy Strategy, Fuel Poverty Strategy, Climate Change Strategy, Environment Strategy) and vision place a strong emphasis on low energy design, the promotion of renewable energy and increased sustainability within the (*Local Authority)*.

The (*Local Authority)* Local Plan now (check) places requirements on most developers to demonstrate that they have fully considered the use of renewable energy technologies and the possibility of connecting to a community heating network system based upon CHP (*policy/policies???? see Appendix (X) consider Hyperlink for web based versions*). Energy efficiency issues must also be considered in the design process (*policy ???? see Appendix (X) consider Hyperlink for web based versions).*

The national legislative standards represent bare minimum requirements, core buildings regulations issued must conform to these, if a local authority wants genuine achievement equal to or beyond the bare minimum it must use it more informal powers. ***To create a high standards framework to achieve genuinely sustainable objectives Members can adopt a step programme of inquiries and actions ensuring the local authority utilises its powers of influence*** along the following lines;

Step 1. Ensuring Minimal compliance: Verify with/ask Buildings Control what methods they use to enforce the statutory minimum requirements i.e.

a. Do they spot check existing and new developments to ascertain compliance?
b. If not all, do they have a spot checking strategy with a random sample target regime of 15-25% of the total annual?
c. Has a local performance indicator for the purpose of monitoring the spot checking regime been created i.e.; authority aims (on a scale annual increasing by agreed increments over Z time frame (shorter the better if serious)) that by Y target year 100% of all developments (new and adapted) will perform to equal or above minimum statutory requirements. And that this indicator will be refreshed annually (by a part 2 if considered necessary) to ensure it absorbs any raising of the national minimum requirements.
d. Once a spot checking regime and local indicator have been established, buildings control will need to be advised of the expected reporting framework. If this is a particular issue or new issue the LA may wish quarterly reporting to Planning / Environment / other equivalent Member Boards or Panels during the first year, followed by decreasing periodicity as standards are raised.

If the Authority is not doing any of the above Member recommendations can be made to rectify this (considering improvements to resourcing as appropriate) immediately).

Step 2. Simple Actions rewarding minimal practice: Work to generate a pro-active/dynamic relationship between Buildings Control and Environmental Control and create a local 'charter mark' accreditation scheme for good practice where developments measurably comply to standards above minimum requirements: - to smooth accreditation use an automatic assessment for entry process for all developments/builds existing (using data gathered through compliance checks see 1. above) + new builds assessed on completion of build as a matter of course.

Step 3. Raising the standards: Use the Local Authorities powers to create a set of recommended local planning/buildings regulations for sustainability. These might be usefully called '**Part Y'** of the Regs for York, stipulate in Part Y the desire for compliance levels above the minimum required – perhaps with reference to the associated higher voluntary standards suggested by the BRE/ Energy Efficiency Best Practice Programme etal (see voluntary standards below). Whilst compulsory enforcement of such standards can't be immediately achieved, the adoption and publication of such local standards and regulations can be used to;

a. Feed back to the Regional Planning and Infrastructure Commission as a tool for raising the regional bench marks
b. Lobby for the adoption of 'Part Y' as a regional recommended standard; i.e. no longer just part Y for York but Part Y for Yorkshire and the Humber
c. Lobby National Government as a tool for persuading more rigorous legislated or legally enforceable standards in the near future.

Step 4. Building in Incentives to comply with Part Y: lobby the Regional Assembly/Yorkshire Forward etal to:

a. Formally recognise and adopt 'part Y' as the regional standard.
b. Introduce a framework of automatic registration and regional certification for Buildings conforming to the part Y standards – thus creating a data base of best practice exemplars by default.

c. Create an annual awards framework for the automatically registered buildings (at;b), to encourage voluntary compliance by rewarding good practice and publicising its practitioners.

Possible approach to raising issue of Part Y awards scheme. Work with the York's and Humber Assembly/ Yorkshire Forward etal (and/or equivalent bodies) to scope feasibility of a Part Y Annual Awards framework. Including the consideration of;

- *Automatic registration and certification based on details in a part Y template to be completed with applications at LA level.*
- *LA sends duplicate copy of completed Part Y submissions to central body (i.e. Yorks and Humber Assembly/Yorkshire Forward.*
- *Central body publishes completed Part Y submissions automatically on their Web site – perhaps by monthy updating regime - on a best practice data base,*
- *Website also includes Information about awards for annual round based on evaluation against submitted part Y's of final build. Site also details judging criteria, dates for next awards etc*
- *Independent judging panel convened to decide overall winners in various categories Annual Publication of outcomes from recorded Part Y builds and redevelopments*
- *Star Studded Gala Event for Regional Award Winners + Hyper Links*
- *Indication of winners on Web site as high achieving Exemplar Projects - each agreed category - from sum total of data base*

→ *Move to next awards round*

Funding requirements for the additional administration all ends etc would need to be mutually considered.

Regional context

A Regional Energy Strategy for Yorkshire and the Humber is currently being drafted. The Regional Policy Statement setting renewable energy targets for the region has been published (*see Appendix (X) consider Hyperlink for web based versions)*. The Regional Spatial Strategy incorporates an energy hierarchy highlighting the regions priorities, these are;

- Reducing the Need for Energy
- The Conservation of Energy
- The Generation of Energy from Renewable sources.

These priorities will need to be implemented through the development planning process.

National Context

The UK has committed to reducing the 1990 level of CO_2 emissions by 20% by 2010 and 60% by 2050.

The Energy White Paper '*Our energy future – creating a low carbon economy'* reminds us that whilst our demands for primary energy are still increasing our levels of self reliance on coal, gas and oil are declining and by 2020 we could be dependent on imported energy for three quarters of our total primary energy needs. The paper also suggests that the best way of maintaining energy reliability will be through energy diversity. To help us avoid over-dependence on imports, the paper suggests that by 2020 there will be;

- Much more local and community generation from sustainable sources
- Increasingly stringent efficiency standards for buildings and electrical goods
- An increasing number of Zero CO_2 Standard homes and business premises.

In January 2005 national government[1] published its Low or Zero Carbon Energy Sources – Strategic Guide (Interim Publication) outlining the principal renewables sources reliance will come to depend upon and their performance levels.

Home Energy Conservation Act
The Home Energy Conservation Act 1995 (HECA) requires local authorities to promote the improvement of the energy performance of homes in their area. A duty has been placed on Local Authorities to secure a significant improvement in domestic energy efficiency across all housing tenures. The current target is a 30% reduction on 1996 levels by 2010. The Utilities Act 2000 obliges electricity and gas suppliers to achieve energy efficiency improvements and for electricity suppliers to purchase 10% of their supplies from renewable sources.

Building Regulations
Building Regulations (and revisions including Building (Amendment) Regulations) control many aspects of the energy performance of new and refurbished buildings (including homes). The regulations set standards for heat loss through the fabric of the building. In addition, they set standards for heating, hot-water systems, the insulation of pipes and ducts and space-heating controls.

Revisions published in April 2002 increased standards for the insulation of the building fabric and introduced extra standards for reducing cold-bridging at junctions between walls, roofs, floors and windows and reducing air leakage for all buildings. There are specific requirements to improve the energy performance of internal and external lighting in homes and provide operating instructions for heating and hot-water systems. Also included for the first time is the performance of replacement boilers and windows and the requirement to improve insulation if existing buildings are being altered materially.

Revisions published in April and September 2005 require a substantial increase in the performance of central heating boilers and ventilation systems. Further revisions on the conservation of fuel and power covering both dwellings and buildings that are not dwellings and targeting improved standards for the insulation of pipes and water storage, and minimum energy performance requirements for new buildings in the form of target CO_2 emission rates, are expected in early 2006.

Standard Assessment Procedure (SAP)
It is a statutory requirement of the Building Regulations for all new dwellings to be energy rated using the Government's Standard Assessment Procedure (SAP); see also Part L of the Buildings regulations. New dwellings are assessed on a scale from 1 to 120 - a higher score indicating greater energy efficiency. Developers should consider the final energy rating at an early design stage and aim to achieve a minimum rating of above 80.

The Building Regulations are a minimum required standard and it is often in the developer's interest to exceed these standards. This can be seen as particularly advisable in respect of energy conservation and sourcing and current international concerns regarding climate change and the demise of fossil fuels.

Planning
Revisions to the Planning Policy Statement 22 on Renewable Energy now make clear that the wider benefits of renewable energy developments are material considerations in planning decisions.

European Context
EU Directive on Energy Performance of Buildings
Directive 2002/91/EC of the European Parliament and Council, on the energy performance of buildings, came into force on 4 January 2003 and must be adopted into UK legislation by January

[1] Office of The Deputy Prime Minister

2006. It will greatly affect awareness of energy use in buildings. The legislation will affect all buildings, both domestic and non-domestic.
The directive aims to improve the energy performance of buildings by requiring:

- a methodology to calculate integrated energy performance of buildings
- minimum energy requirements for new buildings
- minimum energy requirements for large existing buildings being renovated
- energy certification of buildings, and the regular inspection of boilers and of air conditioning systems.

All new buildings must meet the minimum energy performance requirements. For those with a useful floor area over 1000 m2 governments must ensure that, before construction starts, formal consideration is given to the following alternative systems for heating:

- CHP
- district or block heating or cooling
- heat pumps
- decentralised energy supply based upon renewable energy.

Governments must ensure that, whenever an existing building with a total useful floor area of over 1000 m^2 undergoes major renovation, its energy performance is upgraded

Energy Performance Certificates

The directive also states that when a building is constructed, sold or rented out, a certificate detailing its energy performance must be made available. This can either be to the owner or, by the owner, to the prospective buyer or tenant.

EC regulation 2037/2000

Developers, buildings owners and facilities managers must be made aware of the implications of the EC regulations on refrigerants, and the procurement of new, and the maintenance and servicing routines for exiting refrigeration and air conditioning systems.

EC regulation 2037/2000 bans the use of:

- CFCs for the maintenance or servicing of refrigerating and air conditioning systems
- HCFCs in most new refrigeration and air conditioning systems manufactured after 2001
- new HCFCs for maintaining/servicing existing systems from 2010, with a total ban on all HCFCs from 2015.

International Context

By becoming a signatory nation of the 1997 Kyoto Protocol the UK has signed up to a legally binding target of reducing greenhouse gases as a whole by 12.5% by 2008-12. In line with the advice of the Intergovernmental Panel on Climate Change (IPCC) the UK must aim for a reduction of 60% in CO_2 emissions by 2050.

It will be impossible to achieve such targets without developer maximising the integration of energy from local renewable sources where ever possible**.** This might include solar space and water heating, solar electricity generation (photovoltaics), wind power, biomass fuel and other sources of energy.

Voluntary Standards

In addition to all the legislative standards there are also some voluntary standards which developers are increasingly choosing to meet.

National Home Energy Rating (NHER)

The NHER assesses the energy efficiency of a dwelling based on a wider range of issues than Standard Assessment Procedure (SAP) ratings. These include orientation, location, altitude, size, fuel type, heating and hot water system and household appliances. A scale of 0 to 10 is used, with a higher score indicating a more energy efficient home. (A score of 7 should be considered as a minimum to borderline outcome as this only conforms to the Building Regulations at 2005)

The Energy Efficiency Best Practice Programme is more rigorous, and offers a set of standards for sustainable homes, these include;

- **Zero CO_2 Standard**. When energy demand is reduced as far as possible and you have replaced as much fossil-fuel use as possible with renewable energy, you may be able to create a 'zero CO_2' development. This may be achieved by buying electricity on a 'green' tariff from a company supplying renewable energy. If you use any non-renewable energy - eg, gas for cooking, you will need your own renewable electricity-generation capacity large enough to export sufficient power to the grid in any year to compensate for the CO_2 emissions associated with importing non-renewable energy.
- **Zero Heating Standard**. If, in addition to the Zero CO_2 Standard, you can obtain all your heating from passive solar gains and internal gains from the occupants, then you will have achieved the higher 'zero heating 'standard.
- **Autonomous Standard**. If, in addition to the Zero Heating Standard, you can obtain all your services from on-site resources, then you will have achieved an 'autonomous' standard. A grid-linked electricity system can be used as long as it is a net exporter rather than user of power.

Recognised voluntary standards above minimum or readily achievable compliance may be used in respect of work with the Yorks and Humber Assembly (and/or equivalent bodies) to establish a framework for adoption of Part Y + annual awards for Developments,. Including the consideration of;

- *Automatic registration and certification based on spec.*
- *Published Information about awards for annual round based on evaluation against spec of final build, details of judging criteria, candidate development and build profiles + Hyper Links*
- *Publication of Outcomes & Event for Regional Award Winners + Hyper Links*
- *Indication of winners as high achieving Exemplar Projects from sum total of data base*

→ *Move to next awards round*