


**SUSTAINABILITY FORUM – RECORD OF DEBATE**

<b>Topic</b>	<b>This forum believes that developers should require 10% on-site renewables for every new development</b>
<b>Date</b>	16 <sup>th</sup> June 2005
<b>The vote</b>	<p>This debate was triggered by Merton Council, who, as part of their planning requirement stated that, "All developments, either new build or conversion, with a floor-space of 1000m<sup>2</sup>, or one or more residential units, are to incorporate on-site renewable energy equipment to reduce predicted CO2 emissions by at least 10%"</p> <p>Before the debate, an initial show of hands indicated that approximately two thirds of the audience were in agreement with the motion.</p> <p>The speakers kept strictly to their 5-minute deadlines for fear of ridicule and wrath from Rod Bunn and his 'fire-breathing nun'. As the debate proceeded it became clear that there was agreement on the delivery of, at the least, 10% renewables. The emphasis of the debate turned to "Is this the remit of planners" and "should renewable energy sources be located on or off-site". The debaters against the motion managed to persuade many in the audience to change their opinions. The final vote was 24 for the motion and 21 against.</p> 

<b>Attendees</b>	<p>The following attended the debate:</p> <table border="0"> <tr> <td>Arnaud Viel - Imperial College</td> <td>Malcolm Nelson - Laing O'Rourke</td> </tr> <tr> <td>Barry Edwards - Bristol Zoo Gardens</td> <td>Nick Devlin - XCO2</td> </tr> <tr> <td>Bulen Hourshid - Mott Green Wall</td> <td>Phil Smith - Foster and Partners</td> </tr> <tr> <td>Carol Costello - Edward Cullinan Architects</td> <td>Rachel Livings - Pollard Thomas &amp; Edwards</td> </tr> <tr> <td>Chris Twinn - Arup</td> <td>Siew-Fung Then - Gensler</td> </tr> <tr> <td>Dave Worthington - Energy for Sustainable Development</td> <td>Simon R Tilleard - Natural History Museum</td> </tr> <tr> <td>David Turrent - ECD Architects Ltd</td> <td>Simonne Baker - CIRIA</td> </tr> <tr> <td>Eric Londis - Bouygues UK Ltd</td> <td>Steve White - Gensler</td> </tr> <tr> <td>Evelyn Fujimoto - Gensler</td> <td>Suzanne West - Commonsense</td> </tr> <tr> <td>Francois Chavaneau - Bouygues UK Ltd</td> <td>Community Development Trust</td> </tr> <tr> <td>Heinz Richardson - Jestico &amp; Whiles</td> <td>Suzie Baker - ECD Architects Ltd</td> </tr> <tr> <td>Ian Butterss - Faithful and Gould</td> <td>Voon-Fui Lai - Gensler</td> </tr> <tr> <td>Ian Caldwell - King's College</td> <td>Victoria Caesar – Fulcrum</td> </tr> <tr> <td>Ivan Rodriguez</td> <td>Saud Muhsinovic – Fulcrum</td> </tr> <tr> <td>Jill Facer - Chassay and Last Architects</td> <td>James Hepburn – Fulcrum</td> </tr> <tr> <td>Jo Gipps - Bristol Zoo Gardens</td> <td>Martin Rockport – Fulcrum</td> </tr> <tr> <td>Julia Crawford - Gensler</td> <td>Clare Manley – Fulcrum</td> </tr> <tr> <td>Lawrie Robertson - Allies &amp; Morrison</td> <td>Greg Byrne – Fulcrum</td> </tr> <tr> <td>Lee Davies - Pollard Thomas &amp; Edwards</td> <td>Chris Puttick – Fulcrum</td> </tr> <tr> <td>Malcolm Last - Chassay and Last Architects</td> <td>Andy Ford – Fulcrum</td> </tr> <tr> <td></td> <td>Richard Shennan – Fulcrum</td> </tr> <tr> <td></td> <td>Peter Mark – Fulcrum</td> </tr> <tr> <td></td> <td>Chani Leahong – Fulcrum</td> </tr> <tr> <td></td> <td>Kevin Bishop - Fulcrum</td> </tr> </table>	Arnaud Viel - Imperial College	Malcolm Nelson - Laing O'Rourke	Barry Edwards - Bristol Zoo Gardens	Nick Devlin - XCO2	Bulen Hourshid - Mott Green Wall	Phil Smith - Foster and Partners	Carol Costello - Edward Cullinan Architects	Rachel Livings - Pollard Thomas & Edwards	Chris Twinn - Arup	Siew-Fung Then - Gensler	Dave Worthington - Energy for Sustainable Development	Simon R Tilleard - Natural History Museum	David Turrent - ECD Architects Ltd	Simonne Baker - CIRIA	Eric Londis - Bouygues UK Ltd	Steve White - Gensler	Evelyn Fujimoto - Gensler	Suzanne West - Commonsense	Francois Chavaneau - Bouygues UK Ltd	Community Development Trust	Heinz Richardson - Jestico & Whiles	Suzie Baker - ECD Architects Ltd	Ian Butterss - Faithful and Gould	Voon-Fui Lai - Gensler	Ian Caldwell - King's College	Victoria Caesar – Fulcrum	Ivan Rodriguez	Saud Muhsinovic – Fulcrum	Jill Facer - Chassay and Last Architects	James Hepburn – Fulcrum	Jo Gipps - Bristol Zoo Gardens	Martin Rockport – Fulcrum	Julia Crawford - Gensler	Clare Manley – Fulcrum	Lawrie Robertson - Allies & Morrison	Greg Byrne – Fulcrum	Lee Davies - Pollard Thomas & Edwards	Chris Puttick – Fulcrum	Malcolm Last - Chassay and Last Architects	Andy Ford – Fulcrum		Richard Shennan – Fulcrum		Peter Mark – Fulcrum		Chani Leahong – Fulcrum		Kevin Bishop - Fulcrum
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**The case for "This forum believes that planners should require 10% renewable energy sources for every new development"**

Speakers:

Adrian Hewitt, Principal Environment Officer, London Borough of Merton

Ian Taylor, Partner, Feilden Clegg Bradley

Nick Barker, Principal Engineer, Associate Fulcrum Consulting

- Incorporation into planning obligations provides a rapid route to change.
- It provides an incentive.-Most developers wouldn't do anything unless they were forced.
- It provides a substantial economic driver for renewable technology. From the time this became a planning requirement up until February '05, Merton has acquired £60,000 micro-wind turbines, £910,000 photovoltaics and £1,200,000 solar thermal panels. Multiplied up throughout the UK (assuming 250 of the bigger authorities follow suit), this would mean a total of £550 million cash injection into the solar panel, photovoltaic and wind turbine production industry.
- It triggers 'societal collaboration'. It increases pride in the community and raises expectation. It highlights the necessity to think about energy consumption.
- 10% of what? DfES target for carbon emissions (set out in BB87) is 5 kgC /m<sup>2</sup>/yr. With site constraints, community use and acoustic issues, this could rise to 7 kgC /m<sup>2</sup>/yr. For example, a school of approximately 10,000 m<sup>2</sup> will results in a target carbon emission of 70,000 kgC / yr. The 10% limit needed to be offset by renewable energies is 7000 kgC / yr. This would mean incorporating into the building:

- 777 m<sup>2</sup> polycrystalline solar photovoltaics (Polycrystalline panels provide around 80 kWh /m<sup>2</sup>/yr of electricity, offsetting 9 kgC /m<sup>2</sup>/yr). Double this area for amorphous panels and half for monocrystalline.
- 530 m<sup>2</sup> evacuated tube, thermal solar panels. (Evacuated tubes give approx. 500 kWh /m<sup>2</sup>/yr offsetting 26.5 kgC /m<sup>2</sup>/yr if gas were used. Adjusted for weekend and summer overall output is 50% of this, i.e. 13.2 kgC /m<sup>2</sup>/yr.)
- 15 X 3metre diameter wind turbines. (One generates around 4200 kWh/yr offsetting 472 kgC /m<sup>2</sup>/yr.)
- Other technologies that can be used to offset 10 % are biomass from a renewable source and geothermal.
- 10% isn't a lot. In terms of money this may typically be £150,000-£200,000 on a 10,000 m<sup>2</sup> building. (Taken from GLA advice indicating that 50% of the heating demand of a 3000 m<sup>2</sup> building would cost around £50,000. This would typically correspond to the 10% renewable requirement)
- All the drivers are presently for off-site renewables. There is nothing in present legislation that enforces legislation at site level for renewable technology. This needs to happen. The key institutional drivers for change towards sustainable development are presently :
  - The Part L Building Regulations - Community Heating/CHP systems give a carbon advantage and thus can be better incorporated in building design.
  - The 'Energy Performance of Buildings' Directive ([2002/91/EC](#)). The buildings sector is responsible for 40% of carbon dioxide emissions with requirements applied by all member states by January 2006. In the UK all new buildings over 1000m<sup>2</sup> are to demonstrate, in the planning stage, that consideration has been given to community energy/CHP/ heat pumps/ renewable energy sources
  - Regional Development Targets. Millennium Villages, promoted as exemplar urban developments, (eg Greenwich and Manchester), have pioneered sustainable design with community energy schemes and low energy targets, including ECOHOMES ratings. The Regional Development Target set by the Mayor of London's Energy Strategy will require all new major developments to have considered community energy schemes in their planning submission. The Mayor wants to double the amount of CHP in London by 2010.
  - Renewable Energy Obligation. Electricity suppliers must supply a proportion of their electricity from renewable energy sources (biogas, solar, wind etc) and if they are unable to meet this requirement they can pay a penalty to 'buy out' of this obligation. This establishes a trade in
    - (ROC's) Renewable Energy Certificates and generators using renewable energy sources can obtain premium payment for their ROC's (based on kWh generated.) Currently generators comply if they generate at least 500kWh in a month.
    - The Enhanced Capital Allowance Scheme enables businesses to claim 100% first year capital allowances on investments in energy saving technologies and products. This can be set against their taxable profits.
    - Government Sustainable Development Target Programme. Target E1 states that Government Departments are to reduce absolute carbon, from fuel and electricity used in buildings on their estate by 12.5 per cent by 2010-11, relative to 1999-2000. However, bought-in renewables will not be deemed as contributors to annual reductions in greenhouse gas emissions.
    - Planning Guidance - This is presently the only way to enforce renewable technology at site level.

Rising fuel prices will force the issue! Natural resources are limited. And as resources become depleted, fuel prices will inevitably rise. Investing in local renewable energy infrastructure now means operational costs will be less subject to inflation in the future. In years to come we'll all be thanking the planners!

## **The case against "This forum believes that planners should not require 10% renewable energy sources for every new development"**

Speakers:

Brian Mark, director, Fulcrum Consulting

Peter Halsall, Project Manager, Bioregional Development

Ian Mulcahey, Senior Associate Head of Planning, Gensler

- It may divert developers from saving much more CO<sub>2</sub> using more cost-effective methods. It diverts attention and finance from applying the minimisation hierarchy of firstly reducing needs (efficient equipment), secondly reusing any waste energy (with improved insulation) and then recycling any waste energy back into the building (heat exchangers). -It competes for funding with all the tools of passive design. The entire life cycle needs to be explored in order to work out the most economic way to reduce energy usage.
- Planning law is too slow to react to a rapidly changing area of commercial understanding. The solutions of PV, solar and wind-powered equipment are too simplistic.
- For instance, recent understanding suggest that solar panels, even though they have a good payback, may not be the answer. In summer, they compete with waste heat from CHP (encouraged in the Mayor of London's Energy Strategy). We actually need technologies that can store heat from the summer to use in winter and cooling stored in winter to use during summer. This type of analysis and solution would not be valid with this '10% renewables' planning requirement. Any changes to this requirement would take a long time.
- Is it the role of planners to manipulate energy provision? Surely others are in a better position to influence this. Far better to use non-prescriptive legal requirements, audited by technically competent people who can react quickly to new knowledge.
- If there is a place for intervention, it is on a strategic national level.
- Why require on-site renewables when large-scale off-site provision is much more cost effective. -Off gets you more than on-site.
  - 0.75 GWhrs from polycrystalline pv array (8400sq.m) costs £7M. 3GWhrs from 1MWp wind turbine costs £850,000. Four times the power can be produced from equipment costing eight times less.
  - It may be possible to go 100% renewables for less than the cost of 10% on-site.
  - A holistic approach would always lead to looking at off-site provision.
- Renewables (Pv's, turbines etc) are congealed cash. Why not make money work rather than lock it up in equipment attached to the building? Get expert suppliers and use money more effectively.
  - Energy Supply Organisations (ESCO's) will fund infrastructure capital cost and guarantee sustainable energy and low cost over 25years. REGO audited on or off-site renewables can be incorporated. The budget quotation for a REGO audited 10 % renewable energy supply to Oakgrove Millennium Community is zero capital cost with 10% lower electric bills.
- Maximising carbon savings are what it should be about. Over prescriptive targeting of investment by Planning law may prevent it being applied where it saves the most carbon. If we are going to prescribe, it must be right. The 10% target sends the wrong message.
  - Recent research by BioRegional Development group shows domestic energy as only 13% of the average British lifestyle carbon footprint. Transport is 18%, Food is 24%. The 10% target means that the saving is only 1.3% of all emissions
  - The choice? 10 tons of carbon can be saved either by spending £22 thousand on PV's or £2.5 thousand on a car club. The emphasis should not be on energy but on carbon emission This means that investment for carbon reduction should move away from energy, into more important lifestyle issues.

- The 10% requirement is totally irrelevant to the scale of the problem affecting the country in the future. Very few buildings will have these resources and they will barely register in significance
    - How big an impact into energy provision can these renewables make? Currently renewable energy provision is 2.7% of total. Of that 4% is wind and 87% is from burning waste and biofuels. The only way to have a fundamental impact is at a national level
- Use the Building Regulations law not the Planning law

### **Interesting points of discussion from the audience:**

A point of clarity- Passive design, daylighting, heat pumps are not acceptable for provision of 10% renewable equipment..

#### Education

- ❖ 10% may be low but it is a way of bringing carbon- emission to the attention of the design team/boardroom.
- ❖ Fuel bills should clearly show the quantity of carbon dioxide released -This is a good way of bringing attention to carbon emissions.

#### Local power production?

- ❖ The health of the grid is enhanced by local production of power.
- ❖ Although wind turbines, solar panels etc are tokenistic, they are a manifestation to local people that they are involved. They create a constant reminder and community pride

#### Is planning a fast route or is it slow?

- ❖ Fast, in that it's a done deal within 3 months, however slow to take on new knowledge of current technology.
- ❖ Cannot expect planners to be able to adapt to new ideas and implement into policy statements quickly.
- ❖ This is the problem of being too prescriptive

#### Minimum Standards?

- ❖ The 10% target can be dangerous. The setting of minimum standards means that a tendency may develop to only ever build to this minimum standard. - It may stop developers from aspiring to better.
- ❖ The 10% target was reached through long negotiation. The wording states that it should be 'at least' 10%. In fact on two occasions, Merton got developers to put in more than 10% and it has proved popular. Far from putting developers off, it sends a good positive message and developers want to be part of it and develop further in Merton.

#### Role for planners?

- ❖ Planners should be more involved with policies around sustainable land use than delving into 'gimmicks'
- ❖ Planners could suggest on simple renewables on-site without technical direction, such as: water usage, low CO2 emission equipment and waste management.