Energy Notes 11.8.05

1. Thank you all for yesterday. It was very useful. As I said I think we have a distinct contribution here, which is a quite different perspective on a field in which policy is relatively stuck. I don't know if anyone heard the nuclear discussion this morning - triggered by the news that it was going to cost £56 billion plus to decommission our current power plants. Michael Meacher put a strong anti nuclear case, invoking renewables and energy efficiency, but the truth is that the latter is still tacking into wind rather than running before it. So we are at the heart of a really significant and topical debate, in which we can show the significance of design.

2. In terms of the narrative, I suggested that we were exploring a householder centred/demand side approach in contrast to the prevailing (even if contending) models which are supply side and predominantly technical. The emerging points were the following:

i) ***Complexity.*** The new system moves distributes complexity away from the centre to the household, in contrast to the old system where complexity was centralised, and therefore had to make the household simple, standardised and subordinate.

ii) ***User centred.*** The starting point for analysing the new distributed system is the householder, who will be involved both as an active consumer and producer of electricity/power/heat/light rather than a passive consumer. The design of the new system must therefore start from the needs/desires/aspirations/circumstances of the user rather than from technology. They should feel in control and be able to determine their preferred spaces of action.

iii) ***Segmentation.*** The designs need to take into account the differences of householders rather than being based on the average. People will be differentiated demographically, by age, culture, stages of life, income, employment, education and also by motivation and character. The systems therefore need to be flexible to be able to respond to difference.

iv) ***The new aesthetic.*** For some the economic aspects of energy will be uppermost - those on low income and facing rapidly rising energy costs (low income households find energy accounts for 10% or more of their spending). Most energy policy assumes this economic approach. But as Mathew says for many, the mode of producing and consuming energy can also be conceptualised as an aspect of consumption, of expressing identity, a lifestyle statement, a response to longing (for community for example), and an aspiration. One aspect of such consumption is the significance of narrative - of the story line of the commodity or activity (like a holiday, or car, or garden). So we need to keep in mind both the tangibility and the narrative of what we design.

v) ***Open house.*** One of the key questions is how far the energy system within the house is open to this approach. How would a household led approach be different

to a technology driven one. For example, talking to Jim Maxmin last night, he took the technology approach right into the house, in a version of the smart house. This included sensors on appliances, remote control of the system through mobiles, co-distribution of electricity and broadband on same wire. In other words the smart house. (notes of the conversation attached). What is different about our approach. (a) visibility; b) strong technical and financial feedback systems; c) production plus consumption; d) collaboration; e) internet model of power production and distribution rather than radial (the smart house is still largely one way); f) great control over system process, distributed matching supply and demand through managing demand (charging batteries/fridges etc at low demand periods) and supply (using battery power, borrowing/buying from neighbours, or complementary sources (schools supplying their neighbourhoods at night). The idea of the power mobile, in the form of standardised plug in batteries for cars, appliances etc. captured this idea (note Mathew's idea of electricity as process rather than thing, of flow rather than stock). Can we think of the ecology of a house.

vi) ***A distributed household economy***. In place of the centralised, quasi tax charge economy, scope for a more distributed/net-like economy, with trading between households and neighbourhoods, a dual economy of finance and carbon credits, the connection of energy payments and investments to other financial transactions (mortgages, property market via the house pack) to a meta green economy (via a green card), to new forms of property (leasing)

vii) ***Supply economy***. Potential for mass of new products and services. From the smart plugs, metres, sensors, control systems, wallpapers, varnishes, lighting, draught proofings and ventilators, to new services such as a roof maintenance service, green installers, and a wide range of information and advisory services.

viii) ***Support economy***. Central to the supply economy are the services necessary for householders to play their new role. If they are in a sense producers rather than passive consumers, then like all producers they will need access to training, but above all they will need support. There is a clear role for a new type of support service, which would advise on all aspects of energy use and production in the house, the available supplies, monitoring systems, economic opportunities, and even some selection and supervision of installers. The new service could draw ideas from the role of the architect, the doctor, the landscape designer, the district nurse, the fitness trainer, the concierge. Central to the support economy is the issue of trust.

ix) ***Collaborative economy***. There is the potential for householder collaboratives (mobs), as places for circulation and discussion of information, triggers for action, specialisation, trading, joint purchasing, innovation, selection and testing out of suppliers.

x) ***Strategies of transition***. The new economy needed not wait for policy changes, but can be launched through social initiatives, ventures, collaborations, to identify and provide pressure for policy changes.

3. In terms of the work we can do in the next six weeks to test out this approach, and make it tangible, we are exploring eight areas:

i) ***Bills.*** This is very promising, because the bill is a summary of the household's economic relations with the supplier. At the moment its bizarre character (tiny writing, single language, lack of comparative data, minimal feedback) is explained by regulatory requirements and the utilities goal of minimising the activity and visibility of transactions. As the designer of the Telewest system once said to me "the secret is in the billing". So much of what we want to say can be expressed through an imaginative re-design of the bill (have any of the consumer/environmental organisations done work on this in the UK or North America, the NCC, Which, FoE?).

ii) ***Metering.*** Same point applies here. This is a way into the whole issue of control systems, feedback, connecting individual households to wider issues, providing the metrics for the new distributed economy. Distinction from the bill is that this is real time, while the bill is episodic. May be an issue of whether the bill is dissolved into a periodic statement and replaced by net accounts which are directly linked to bank accounts, and the energy/CO2 statements sent out with the bank statement. The metre issue encourages to think about what type of metrics we need for our active energy house - balance of use relative to personal CO2 target/budget, annual daily average, future daily average target to meet budget, energy produced alongside energy consumed, could we include a reading from the water metre with CO2 implications, and so on. The point is, through the tangibility of the metre we can lead into many of the issues of the new household energy economy, pricing issues and the necessary feedback systems. It would be interesting to see how the Grid operates its control and which of these has any relevance to a household control system. May be that we need a control panel as well as a meter, but there is potentially an overlap.

iii) ***Lifestyle products.*** There may be a point in lifestyling one of the other things we are working on - for example the metre, control panel, so that we make two point through one object. Visibility/beauty/simplicity/control. The whole modern car control system, particularly on the hybrids may be a good source of comparison. What about the thermostat/timer question. I suspect these are very ill used. Timers, over-rides, general house rather than appliance specific. This is the main form of the modern energy control system. Can they be improved. What happens when they go wrong in the on position?

iv) ***Home energy kit.*** See the Jim Maxmin note. What is the key point being made through the home energy kit? Is it the introduction to the world of the smart home, and the new technological possibilities. Is it a form of smart retrofit that offers a

way of reducing electricity demand by x%, and should be part of any package, of equal importance to insulation, light bulbs etc. So it encourages us to understand the energy ecology of the house, the extent to which the householder can intervene, the scope for savings. Can we therefore use it to present this part of the narrative - that the house could run so differently. The pack represents a collection of tangible interventions. Can each intervention have its impact calculated (and thus be awarded a saving point?). Should the pack include some of the conventional measures as Mathew suggested, like the lightbulbs, the insulation et al. or merely information about them. The point here is to define our concept in a way which is distinct from the smart house (which is consistent with the old energy system).

v) ***Energy Improvements Credits.*** This idea poses the more general question of how to valorise energy improvements other than through financial savings on the bill. Its role in the narrative could be that - that if we can crack this, then all sorts of other things would be possible, e.g. carbon credits, sale of ROCs and so on. It also explores the question of investments requiring long pay backs. The problem (as with the national schemes) is how to establish a norm or base against which to measures changes. Because of the difficulties, it is large energy users who have been the main focus for Kyoto mechanisms. Worth checking on how the Climate Change Levy is calculated. I suspect a business has to present its annual energy use, which is then taken as a base, but not clear how this affects a firm that is expanding. I was once told that they tried to do this on the basis of facilities. So if you had a factor of size x using y of energy, that would be the base, and any expansion could be taken into account in that way. Someone called Ralph Torre once tried to develop a mechanism that would allow a city to establish a norm, and then gain carbon credits if it was able to reduce energy use below that. DEFRA were very interested in this for London. The authority on all this is Phil Jessup with whom we worked on the charrette and it might be an idea to e mail him to ask where things stand on household metrics. Also Brenda Boardman because she will have had to think about this in relation to a personal carbon allowance. The simple line is to give everyone an average allowance, and then leave the carbon trading mechanism to sort out the penalties and incentives. But she will have thought further on this I suspect. An alternative is to attach a credit to every action taken (quantity of insulation laid down, light bulbs replaced, low energy fridges installed. Would this not require an energy balance sheet to be prepared for each house: number of appliances, state of insulation, SAP rating etc. Points could be given for improved SAP rating. But the easiest might be electricity consumption. That households have to establish past three year average as the baseline. Then any reduction in this is given a credit which can then be carried to the next house. It could also be carried forward and cashed in for twice the energy value during retirement (or left as a legacy) or it could be sold to those who had over the average, and were being charged twice the rate for the excess. The trading could be undertaken via an e Bay like exchange. With electricity and has prices rising, there could even be a futures market. The value of exploring the idea via improvement credits is that it raises many of the same issues as the

personal allowance scheme without bringing in rationing. One point that got lost in our discussions which might be worth keeping afloat is the sellers pack coming in at the start of 07. It would be good to see where the discussion of this has got to, because some of the issues raised here may be pertinent. What kind of information is useful in a sellers pack in order the influence the sale; i.e. an aspect of the improvement incentive.

vi) ***Roof leasing.*** Where might this fit into the larger story. A new type of service company (negawatt idea - though this is quite a worked on avenue). If we are reviewing this, might be worth looking at the experience of negawatt companies, how they have operated, whether householders have been ready to shift control of their energy to a service provider (important question for the whole leasing debate - and servicising more generally). So it could be that it is the leasing concept that is key rather than the renting idea (what else could in principle be rented - the holograms from the triple helix windmills, advertising space…). Let's see how far this can go.

vii) ***Micro nuclear.*** Similar point applies here. What does this illustrate (setting aside for the moment the issues of hazards & waste - is there a security issue)? Distributed generation at the household or neighbourhood level and the possibilities opened up here. Points to check for is the flexibility question. Can the micros be turned on and off to match demand, or is it like large nuclear that they have to remain on - and thus become a distributed base load. Have Toshiba designed them for the old grid system, or could they power an Allen Jones type local energy network?

viii) ***Mobs.*** These raise very interesting questions about the nature of consumer/producer households - common to many modern economies (food, education, health, culture, even transport). To what extent and in what ways are their advantages in some form of collective consumption/activity in this field. In other words, how far can the principle of mobs be expected to go. It would be really interesting to draw on our Kent experience, rough up a quick system, and then test it out through Robin's network to lead on it; as Jennie said it would be like 3 of the Kent demi (unsupervised) mobs. The issue is what task could we set which would be feasible to do in the team and what inputs and back up could be got together in the time.

ix) ***Environmental Support Economy.*** This is a key part of the narrative, and of our practical intervention. This is what others will be looking to see what design has to say. Visibility, metrics, new investment and credit instruments, house packs could be thought of as tools perhaps; but the major challenge is how this could work as a human centred system where the household faces a new complexity. The issue is what we can add to the work of the charrette in the time. I think we should distinguish the business concept from the service approach and concentrate on the latter.(the former will be taken up in the brief for the pilot). What would a service design approach contribute to the notion of a domestic environmental

support economy, with the focus on the energy part of it. The first stage is to consolidate where we got to by the end of the charette. And then? Looking at each of the stages we identified? Considering the role of a web based resource to back up the person advisers? One thing that came out yesterday was the notion that this service played an equivalent role to the fitness coach to the mobs in Kent, but in this case had a more extensive role? We could think of them as clean/light/smart energy coaches, with their array of tools and platforms to summon in support. Interesting implications for the economic. Individual households could still use them, but would it be possible for some of these tools to be self administered within a group. Or could the mobs take similar houses, and therefore use the coach on one of them. I don't think this has been thought of in relation to the Canadian scheme. It opens up the question of volunteers, those in the mob who follow up on x or y, who learn through doing their own house and having it then professionally/coach assessed, and then continuing in the expert patient mode. So we could envisage setting up an expert energy household programme. Issues of information, house system design, advice, trust.

4. Many great ideas came up: the virtual attic/ the energy and water room/ low claims bonus/ energy take aways/certificates like those on the back of Spanish hotels/easy bill/ church based environmental services (retrofitting churches?)/ the gift economy/ home as appliance/ insulating wallpaper/quilting the ceiling/ Tesco power (they do broadband already); playground as generators, treadmills, bicycle batteries, Manzini's design for the knowledgable/ plug and save/ the heart beat of the house/ junk energy/Active Currents/ benefits for the person not the house/ energy independence/ self reliance/safe energy/ grey power/ from 80:20 to 20:80).

RM 11.8.05