

**A Green Concierge
Service**

Business Plan

Ecologika

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A Green Concierge Service: Business Plan.

Summary

1. **Context.** The proposed service is aimed at radically changing **energy use in able-to-pay households**, which account for 82% of all households and 23% of national energy demand. Whereas Britain has been strong in its fuel poverty programmes, it has been much less successful in stemming the rising energy demand of able-to-pay households.
2. **Design review and concept phase.** The reasons for this, and ways of engaging able-to-pay households more effectively in reducing their energy demands on the grid were explored in a Design Council project, which used design techniques to develop the outlines of a new service. A business plan for the service has now been developed.
3. **Service features.** The proposed service has the following features. It is:
 - **User centred**
 - **Aspirational,**
 - **Choice rich and hassle free**, by providing concierge-style support in design installation, and quality control of retrofitsand connects:
 - The household as **consumer and potential producer** of energy (micro generation)
 - Energy investment in homes to simplified **grading system** to be included in Home Information Pack
 - Energy to other aspects of environmental lifestyle (**water, waste**)
4. **Service elements.** Some components of the service already exist but need developing. Others are well developed overseas but rudimentary in the UK. There is no integrated makeover service, save that provided on an artisanal scale by green architects.
5. Key elements to be developed:
 - **A green mortgage.** The aim is to link the service to a new green mortgage which rolls the costs of a green house survey and installation into the mortgage.
 - **Home assessment and Energy Performance Report.** The introduction of the Home Information Pack in 2007, with its requirement for an energy performance report and inclusion of recommendations for improvements will

provide a regulatory stimulus to energy retrofitting and to the potential for an integrated service for carrying out the recommendations

- **Personal energy/environmental adviser/designer.** This is the environmental equivalent of a personal trainer or the NHS's proposed health coach.
 - **Green pages and environmental impact software.** There are a large number of websites providing information on new products (such as smart metres, insulating wall cladding, solar roofs, wind turbines, and low energy appliances). What is needed is a single easily accessible and hosted site which acts as an edited portal, alongside software that allows a householder to assess the energy (and resource) impact of particular investments.
 - **Finance and incentives.** Prime finance is the green mortgage, linked to end of works grants (successfully introduced in the Canadian Energuide programme).
 - **Commissioning and supervision of works.** This is the traditional role of project managers and architects, but has been lacking in most environmental programmes. It is proposed to develop a supply network of skilled trades, with knowledge of environmental retrofitting, identified through green architects and other proven trades networks, and supported by training programmes.
 - **Service integration.** There needs to be a co-ordinator of the services modules, providing a single point of contact for the householder and responsible for the quality of service delivery.
6. **Service Development.** Building on the design concepts, two development stages are proposed:
- *A prototype stage* lasting four months with 40 households to test the demand for and supply of elements of the service
 - *A scaling stage* lasting 18 months, aimed at retrofitting 5,000 households. This stage seeks to establish what level and form of incentive is most effective in engaging able-to-pay households and owners of rented accommodation, and the level of public funding required to provide a commercially sustainable service.
7. **London.** It is proposed to undertake the service development in London for 4 reasons:
- the able-to-pay residential sector accounts for four fifths of all domestic energy demand, and for 36% of London's total energy demand

- a reduction of 20% in London's domestic able-to-pay demand over the next decade as set out in the Mayor's strategy, would come close to meeting the Government's national target for all energy demand reduction over this period
- London's housing stock provides a wide range of properties, with below average energy efficiency, which provide a good test-bed for the service
- there is strong political support from London's Mayor and Deputy Mayor.

8. Partners

The service planning has brought together five key specialisms:

- **Design** (through contributions by the Design Council)
- **Home assessment and certification** (National Energy Services)
- **Green Architects** (The Green Register Network)
- **Concierge Support services** and knowledge management technology (Ten UK)
- **Local authority and public sector support and validation** (GLA, LCCA, LEP, Future London, London Borough of Lewisham, and EST)

9. Business Plan for pilot. The partners have developed the business plan to prototype a service for nation wide scaling, testing out which are the key elements of a core service, and which can be optional paid for extras. It is designed to be action oriented market research, allowing the service offering to be refined and price points established, as well as testing alternative marketing approaches.

10. Finance The cost of the prototyping stage is estimated at £125,000, and of the development stage at £1.3 million. A critical element in the costs is the proposed incentive to householders, that by the end of the test period accounts for 43% of gross costs. Estimated income generation by this time means that the overall level of public funding required falls to £82 per household.

A Green Concierge Service

Environmental rationale

1. The debate about the future of the UK's energy economy has come to focus on alternative forms of energy supply, principally nuclear versus large scale renewables. The potential for reductions in energy demand, while recognised, has carried less weight because of the inability of policy over the past 30 years to fully stem the rise in demand. Although policy has stabilised energy demand per household, the rise in the number of households has meant that domestic energy demand has increased by a third, or 1% p.a., since 1970.
2. Yet problems on the supply side of energy, and in particular the rise in the price of oil and gas, now place an even greater premium on how to arrest the growth in consumption. The domestic sector accounts for 28% of final energy demand and 34% of electricity use. That is one measure of the potential significance of the demand issue.
3. The UK Government has taken a wide range of initiatives to counter the rise of household energy demand. Reduced domestic demand was made a priority in the 2003 Energy Review and has been widely supported. Compared to new sources of energy supply it is cheap, flexible and secure. But policy has yet to find a decisive means of breaking the link between economic growth and domestic energy use.
4. To date the main progress in the UK has been made on improving the energy efficiency of domestic appliances and that of fuel poverty homes.¹ It has been less successful with respect to owner occupiers and the private rental sector. Yet these able-to-pay households account for 82% of all households, and for nearly a quarter (23%) of national energy demand. Reducing their pressure on the UK's grid supply has become one of the major challenges for the Government's climate change strategy.

Government Policy

5. There have been three characteristics of UK policy over the past decade. It has been:
 - Utilitarian. The focus has been on low cost/high impact measures (notably roof and cavity wall insulation) and window replacement.
 - Free. The great majority of the work has been free to the householder or heavily subsidised.

¹ Recent revisions of Part L of the Building Regulations will encourage energy efficiency measures in new build, but also stimulate changes in existing housing stock.

- Mass delivered. It has sought to deliver policies primarily through intermediaries, particularly local authorities and improvements to council housing stock, and through the utilities via the Energy Efficiency Commitment (EEC).
6. This approach has led to significant improvements for those living in social housing or fuel poverty, within the constraints of local authority budgets and EEC funding. But it is not geared to providing services for which owner occupiers and private landlords are expected to pay.
 7. Many local authorities have run schemes to promote and subsidise basic energy efficiency measures. So have the utilities, often in conjunction with local authorities, for they are required to achieve 50% of their energy savings in the able-to-pay sector. But for the most part the approach has been utilitarian – as befits the name and the tradition of utilities - and they have met their targets through free or subsidised offers, primarily of insulation and low energy lightbulbs. The take up and impact of these schemes has not surprisingly been modest. As the 2005 Ofgem report on EEC put it:

‘The EEC...would appear to have done little to encourage consumers to consider their energy demand and their effect on the environment. The structure of the EEC 2005-2008, in terms of the way it encourages suppliers to promote energy efficiency, has seen little change. It would therefore seem likely that this trend will continue.’²

There remains a major gap between the existing level of energy efficiency in the able-to-pay sector, and that to which Government energy policy aspires

A householder-led approach

8. This proposal suggests that to make substantial inroads in the able-to-pay sector a different approach is necessary. The starting point should not be a prescribed set of measures selected on the basis of cost and environmental impact, but rather the interests and aspirations of householders, and of what they would be willing to pay for.
9. Seen from this perspective, the current offerings are a weak consumer proposition. The double glazing industry provides a partial exception. They have invested heavily in the promotion of their product, and the result is an annual public and private market of £3.3 billion. But this provides only one component of the energy efficient home. Attempts to supply a set of integrated services – that treat the house-as-a-system – have been marginal, confined largely to initiatives at the luxury end of the market. The 1980’s hope that domestic ESCOs would take off to manage all aspects of a household’s energy have not been fulfilled. Policy analysts were clear of the potential, but have been unclear about the mode of delivery.

² Ofgem 2005 p.71

10. In May 2005 the Design Council in conjunction with the London Climate Change Agency convened a charette to explore this issue. It was attended by product and service designers, by policy makers and practitioners in the domestic energy field, and by a delegation from Canada of those who have been engaged in an ambitious nation wide scheme for energy efficiency in the able-to-pay sector.
11. The designers approached the issue from a user-centred service design perspective. They suggested a psychographic as well as demographic segmentation of the market, asked what service models might be appropriate for a householder oriented energy service, from Tesco and Tupperware to Amazon and Easy Jet.
12. Following the success of the charette, the Design Council provided funds through RED, its innovation unit, for a two month project to understand the market and develop design concepts for a domestic energy service. The design team completed the field work for the project at the end of September 2005, published the results through the RED website (futurecurrents.org) and reported back on the prototype concepts to the original charette stakeholders in November.

A deep service approach

13. The design research highlighted four main factors that have suppressed demand:
 - *Intangibility*. Energy is hidden, and for most able-to-pay households, off the domestic radar screen. Meters are high up or under the stairs. 50% of able-to-pay households do not look at their bills, and few record the levels of their energy use.
 - *Information*. Part of the problem is knowing what potential savings could be made, and who could reliably do the work.
 - *Economy*. Energy is a small proportion of total spending, and potential cost savings do not outweigh the time and trouble of identifying, commissioning and overseeing installers, and introducing new forms of energy management in the home
 - *Lifestyle*. Managing energy is a chore rather than a pleasure. It is not aspirational. For only a very few is energy shopping a significant hobby or a recreational activity.
14. How can these barriers be overcome? The local and central government programmes have used price incentives for energy efficiency measures. Canadians have placed an additional emphasis on social marketing to increase consumer awareness of environmental issues and thereby encourage more environmentally responsible behaviour. Both of these have had some if limited effect.
15. The design research suggests a complementary approach, working with the aspirations and realities of people's daily lives, and finding ways in which a new

'light' energy economy could be seen as attractive rather than restrictive. It suggested that the goal should be to work with the consumer grain rather than against it.

16. If people are to pay for energy reducing services, the designers suggested that the service had to be:

- *Desirable*. Energy needs to become tangible and aspirational. The project developed concept prototypes for home energy monitoring, and quasi-gaming software for estimating the existing and potential energy use of different types of houses.
- *Joined up*. It needs to be integrated with other environmental practices and mainstream domestic activities, such as buying a house, having a baby, refitting a kitchen, or replacing a roof.
- *Productive*. The householder should be recognised as a producer not just a passive consumer of energy, and the potential for the domestic generation of energy should be included as part of a package. A number of the sample households were attracted by having a wind turbine on their house, less in terms of its financial value, than as a consumption good.
- *Hassle free*. There needs to be a support service, that provides the information, design, training and supply for customised packages of measures, and ensure they are easy to adopt.
- *Smartly incentivised*. The service must be formulated, established and run to be economically attractive. This involves designing incentives that go beyond simple price discounts. One example was to develop a tangible link between energy improvements and the value of a house, through a simplified star-rating system.³ Another was to establish a connection between energy efficiency investment and the householder (rather than the house), for instance through a power pension which gives credits to home improvers that could be cashed in as cheap energy after retirement.
- *Narratable*. Energy, and its production and consumption, should be part of the story of a house, following a range of narrative lines - ecological systems (the swimming pool as radiator), climate change impact, comfort and convenience, as well as economic.

Service design: the challenges

17. In creating a service with these qualities, the designers identified three immediate challenges:

³ This is now to be introduced as part of the new energy rating system being developed for the Home Information Pack.

- *Technical.* There was a paucity of products that were fit for purpose, aspirational and affordable for many of the components of low domestic energy systems. This is clearest in the case of home generation, where wind turbines, PV roof panels, and micro CHP generators are still high cost. But it is also true of smart metres, energy usage display systems, draught proofing, and energy assessment tools. Examples do exist world wide (notably in Scandinavia), and costs can be reduced through a variety of incentives. But much technical and design work remains to be done, and the information on and availability of equipment and materials that do exist is patchy and time consuming to access.
- *Skills.* The know how and skills required for the installation, maintenance and use of many elements of new energy systems is ill-developed. PV or solar hot water installation is still a specialised section of the roofing trade. The same is true of wind turbine and CHP installation, of plumbers, kitchen installers, electricians, and the general building trades, quite apart from architects, building engineers and surveyors. This is on top of the problems of the general availability, price and quality control of these trades in the everyday market, and of knowledge and confidence in the design and operation of new systems by the householder.
- *Process Complexity.* The design, commissioning, and installation of new systems is a complex process, even for mainstream renovation and retrofitting. For energy improvements there is the additional problem of identifying needs and possibilities, and of accessing the necessary products and skills. Green makeovers - of which energy production and consumption is a significant part - are notoriously complex and information intensive.

18. None of these are insuperable. New products and skills can be developed, and a successful service would itself provide a stimulus to such development. But the design phase underlined the fact that from the first the service could not be confined to a single element of a system or stage in a process. It needed to be comprehensive, and provide a means of navigating the complexity, and managing the process on behalf of the householder.

Prototyping the service

19. Following the design concept phase, it was agreed that the next stage was the prototyping of a service informed by these concepts, prior to scaling it up into a commercially sustainable proposition. The present business plan sets out the characteristics and costs of the service proto-type, and of a further 'proof of concept' phase.

The EU Directive on the Energy Performance of Buildings

20. A particular opportunity for such a service has been opened up by the implementation of the EU Directive on the Energy Performance of Buildings. As translated through British legislation, this will require the owners of all domestic properties which are

sold to provide a sellers pack for prospective buyers, which will include an assessment of the energy efficiency of the building and suggested measures on how to improve it. The new requirements will be introduced on a voluntary basis in June 2006, and become mandatory from June 2007.

21. Buildings will be rated on the SAP scale of 1-120, simplified into six performance levels similar to those used for domestic appliances. The assessment requires 100 items of data and will be administered by an estimated 8,000 Inspectors who will be responsible for issuing the certificates and will be paid by the homeowners. A similar system is expected for the rental sector, though the Government has yet to announce details of the scheme.
22. The requirements promise to have an impact similar to the classification regulations for the energy efficiency of domestic appliances. In the latter case manufacturers have had an incentive to improve their products to an A or B grade, and the Government hopes that the potential impact on house selling price will provide a similar incentive for the energy upgrading of buildings.
23. The owner occupied sector is the key. It comprises 16 million owner occupied dwellings in England and Wales (71% of the total) of which some 10% are sold annually (1.79 million in 2004). If we add the 2.4 million homes which are rented, then the majority of the UK's housing stock can be expected to be affected by the new regulations over the coming decade.
24. The question is how responsive householders who have had the audit will be. The possible impact on the home selling (or rental) price will have some effect. But a number of the factors we have identified above as barriers to home energy retrofits are likely, if unaddressed, to weaken the response. The Canadian Energuide Programme found that only 20% of those receiving an audit undertook follow up works, in spite of the availability of approved lists of contractors. This rose to 30% following the introduction of an incentive covering 25% of the cost of the works, paid after their completion and a second audit. It remains to be seen whether the possible impact on the sale price of a house will be a sufficient incentive for the UK scheme, as it stands, to prompt follow up rates that match the Canadians.
25. There is a second issue. The Home Energy Audit is not comprehensive. It covers only the fabric of the house, and central heating. Unlike the requirements of the 2006 Building Regulations for new build, it does not test for air leakage. It does not cover light and appliances, nor the potential for micro generation within the home. Yet each of these has to be taken into account for any longer terms plans for reducing domestic energy demand.
26. While heating still accounts for 60% of demand, it is electricity used in lights and appliances which has been growing most rapidly (and is forecast to continue to do so with the expanded use of electronics in the home). Moreover, while the established assumption is that only 15% of heat loss is the result of air leakage (hence its absence

from the proposed energy audit) evidence from North America, and from individual tests in London, suggest that the figure for many older houses may be much higher.⁴

27. These limitations of the mandatory home energy report, provide an opportunity for the launch of a new service. They provide a timely bridgehead to a more comprehensive audit, and to a range of services for reducing domestic energy demand on the grid. Prospective sellers and renters are likely to have to pay upto £600 for a full home condition report. A new service can help building owners get tangible returns for their investment.
28. The new mandatory audit potentially provides a window for action on wider dimensions of the UK's housing stock and environmental home management. For it is not just the house and its appliances that are at issue, but they way they are used. Nor is it just direct energy use in the home that bears on climate change. Domestic water, waste and travel also have a substantial direct and indirect impact. While the compulsory audit is directed at the energy efficiency of the built fabric, in practice it prompts questions beyond it. As one auditor we interviewed put it, it is rare that a householder witnessing an energy audit does not ask for advice on other environmental issues such as water and waste, both of which have significant energy implications in their life cycles.

A jungle without maps

29. A more comprehensive audit provides a service opportunity. It is one way of making energy more tangible for the householder. Another opportunity is presented by the imperfections in information facing the householder once the audit it completed. The new RDSAP audit will leave homeowners with a set of recommendations for cost effective energy efficiency measures, and there will be further recommendations from the premium audit. But how is the homeowner to decide between these categories of measures, and the range of choices within each category? How is he or she to identify who can carry out the works, and what sources of finance and/or grants are available?
30. The existing sources of information are insufficient on their own to facilitate widespread implementation of recommended measures (quite apart from the making the most of wider opportunities for environmental improvements within the home):
 - published or web based independent guidance has generally been prolific, sporadic (as in the case of consumer testing services like Which), and focussed on products rather than services. There are many green websites, providing assessments on a wide range of products, and lifestyle choices, as well as professional technical assessments. The problem, as with all such extensive information systems, is how to navigate them, and how to assess the assessors.

⁴ The Canadian Green Communities who are responsible for large scale home energy auditing for the Canadian Government, estimate that air leakage usually accounts for over 50% of heat loss in Canadian homes, and they found a similar result from the two sample audits they undertook for the Design Council in London.

- public sector advice has been limited in the extent to which it can recommend products or services, because of the danger of exhibiting partiality. Both local councils and the Energy Savings Trust have produced lists of approved suppliers, in the form of a quasi Yellow Pages. Yet this still leaves the homeowner with a lack of information about the quality of potential advice and supply.
- with private providers, the issue is a question of trust in a sector noted for its imperfect market information, reliability and standards of performance.

31. The service challenge is to provide personalised independent guidance to homeowners with respect to the package of goods and services necessary to improve the energy performance of a home, to their source of supply, and to trustworthy installers.

Service concept: a green concierge service

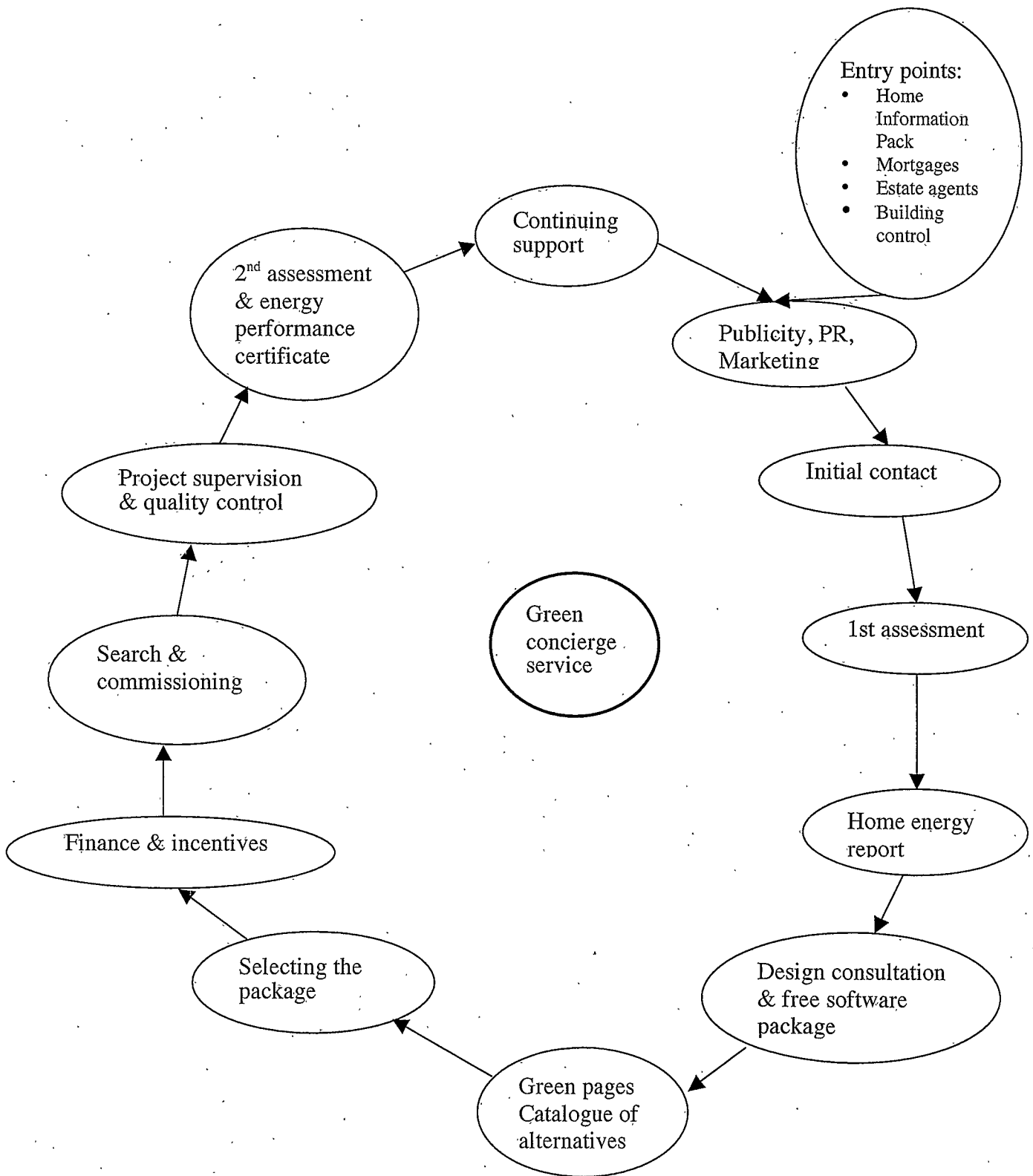
32. We propose here a green concierge service as a response to this challenge. The service would support householders not only in arranging and evaluating the home environmental audit, but in planning and commissioning a response to its findings, and overseeing the works. It would provide a personal, integrated set of services, whose aim would be to overcome the barriers identified in the Design Council project. We refer to this as a deep service model.
33. The proposal draws on the experience of personal concierge services on the one hand, and architectural practises on the other. Architectural practise is well known. It combines surveying, design, commissioning and oversight of works. For housing retrofits, it has remained largely artisanal in form, and therefore limited in reach.
34. Concierge services, using modern information technology, are a more recent and less recognised phenomena. The central idea is that the providers of the service act on behalf of the householder/consumer rather than as delivery vehicles for the sale of goods and services to the consumer. They act in the role of advisers and as advocates on behalf of their clients in relation to complex and potentially antagonistic markets. It may be a question of mundane problems of daily life, like finding a plumber or moving house. But it also connects to the growth of life coaching, and trends in health and education where individuals are the primary producers but need advice and support in their activities. There are clear parallels between these fields and the complexities involved in the environmental management of the home.
35. Concierge services are based on four principles:
- *Consumer trust* (the provider of many personal services must be trusted - since it is a form of personal delegation of domestic tasks, and this includes providing access to personal property, finance and information).

- *Specialised knowledge*, particularly in respect to transactions in sectors with imperfect markets (such as the buying and selling of used cars, building renovation, or financial advice).
 - Access to *trusted specialist suppliers and products* on favourable terms (whether they be domestic wind turbines, theatre tickets, or hotel reservations)
 - The organisation of a flexible, available, and *trustworthy supply chain of labour* to provide these services
36. Concierge services have shown rapid growth. Initially geared to the needs (and finances) of upper income consumers, leading players in the sector have been exploring how to further reduce costs so that they can provide a trusted, personalised service at affordable rates.

Service design

37. The main elements of the service are shown in Figure 1. It would include the following elements:
- A home audit and environmental report.
 - A design/plan and estimation stage.
 - A hosted portal (The Green Pages) of available environmental products and services.
 - Access to low cost finance.
 - Supply/contracting advice, supervision, and approval of works.
 - A second audit and certification of levels achieved. This will be provided by a return visit by the original green auditors.
 - Continuing support (like Applecare which offers purchasers of Applemac computer a year's personal tutorials and a premium trouble shooting service for a low fee)

Figure 1 Elements of a Green Concierge Service



An expanded home audit.

38. The mandatory energy audit provides a key entry point for the concierge service. The significance of auditing and the nature of the proposed RDSAP audit are discussed in Appendix 1. For the concierge service, householders will be offered the standard energy audit as required by legislation, but also the choice of a premium audit, that will also include a review of electricity-specific lighting and appliance use, the scope for micro generation, water conservation, waste reduction, trip reduction, reduction and elimination of pesticide use.
39. The premium audit will also include a blower door test in the prototype phase. In the long run the question is whether the additional cost of the blower door is justified by the benefits, which may include enhanced customer motivation⁵ and additional information about cost savings from draughtproofing. The blower door tests during the prototyping are intended to contribute data from a range of house types, on the basis of which a research project can be undertaken to re-examine whether air leakage is in fact responsible for only 15 per cent of heat loss in the UK, or the larger heat losses recorded for North American housing.
40. The initial auditor will also be an immediate personal contact for the Concierge Service, and suggest ways in which the householder may wish to proceed. Finally they will be responsible for a second post-works audit and certification to be used in the Home Information Pack.

Design and planning

41. If the works to be undertaken are straightforward, such as increased roof insulation, or the filling of cavity walls, advice on contractors and technical specification will be delivered by the auditor or by a case manager via the telephone. With more complex issues the service will offer access to:
- environmental advisers, explicitly working on behalf of the homeowner, who will provide access to specialist knowledge specific to the homeowner's concerns (for example how to insulate non cavity walls, or insulating windows in conservation areas), act as a more general point of reference and advice (including financial and grant availability, and planning procedures) and help negotiate the complexity of web information in relation to a homeowner's specific requirements.
 - software for the exploration of the cost and environmental impacts of various energy saving appliances, domestic generation, and home improvements
 - architects who are able to incorporate an environmental approach in domestic retrofits (for example in the installation of new bathrooms and kitchens)

⁵ it has been suggested that the blower door lends excitement to an otherwise unexciting utilitarian process.

- micro generation specialists
42. The core proposition is that the general recommendations of the audit, and virtual availability of information on costs, benefits and installation of the recommended measures is not sufficient, and that a trusted intermediary/adviser/guide is required if action recommended by the audit, and the opportunities presented are to be followed up.

Green Pages

43. The Green Pages are conceived initially as a publicly funded, open source internet site, with a strong design input, which makes publicly available information on green products and services, and on sources of supply, related to the makeover programme.
44. A web-based database of accessible information about green goods, services and practices is a key component for any environmental support service. From the viewpoint of a householder such a site needs to be:
- Comprehensive
 - Specific, both about products and services, but also market accessibility (retailers, on line availability, local service providers)
 - Technically informed (including available data on product testing)
 - Curated (with ratings by professionals)
 - Assessed against multiple criteria (such as environmental impact, cost, production geography, design and quality)
 - Informed by user feedback (as with Amazon)
 - Well designed and easy to use
45. There are already a large number of websites which embody some of these qualities, but none that we have yet identified which does them all. Appendix 2 contains a sample list from the UK and North America. They fall into three categories:
- i. public or quasi public websites, which are comprehensive and include approved lists of products and service providers, but are constrained from recommendations and ratings because of their public role of impartiality among suppliers.
 - ii. green directories, which include products and services primarily according to environmental criteria, and contain little information on quality, design and relative cost.
 - iii. green on line stores, which provide a quasi-curating service, by virtue of the goods and services they choose to stock, and which may contain detailed technical data as with Construction Resources. The selection tends again to be primarily based on environmental criteria, and they function as a shop window for leading edge and environmentally experimental products, that necessarily restricts

their market.

46. If one takes products being considered by an environmentally conscious householder – such as whether to replace an existing toilet with a low flush design, or to fit internal dry wall insulation, or to incorporate PV as part of re-roofing – there are many sites that encourage such moves, but few that provide details and prices of the products internationally available, and of the pros and cons, the problems and the reliability of the various options. And those that do provide specific product and technical information are not necessarily easily identified among the many green guides and directories available on the web. They have to be hunted down.
47. One option is to provide a well-designed portal to existing sites, which would give a measure of guidance and an improvement in accessibility. This has the advantage of building on what already exists, focussing resources on the design of the consumer interface. But it would not address three of the observed limitations of the current sites:
- the privileging of environmental over other criteria
 - the lack of trusted expert advice or ‘curators’.
 - the centralised nature of these sites, and the need for them to develop a capacity to tap into distributed knowledge and experience of products and services.
48. The first of these requires some work in extending existing green directories.
49. The second needs a response that is informed by experience in other fields, such as DIY, antiques, cooking, health, films, art, or cars, where an infrastructure of advice exists in the form of newspapers, specialist magazines, TV shows, clubs and now the internet. In all these cases professional intermediaries have emerged whose task is to access a wide range of technical and consumer information and provide judgements and advice. A website can supplement Google and other search engines either by becoming a portal for the various professional commentaries of this kind (a good example would be access to the reviews of particular films). Or, it could seek to play a curatorial function of its own, in the manner of the Michelin Restaurant Guide.
50. The third should borrow from internet developments, which like Yahoo, are moving away from centralised content to the provision of platforms and tools where the content is provided by the users. E Bay, Amazon and Slashdot are well known examples. Another relevant one is Myspace, which within two years of starting up has become the leading lifestyle portal for social networking on line. It provides a platform for chatrooms, blogs, groups, user forums, music (used by over 350,000 bands and artists), videos, schools, jobs and a wide range of classified listings.⁶

⁶ Myspace is now the fifth largest web domain, with an estimated 35 million registered accounts, and together with other sites from its parent InterMix, has recently been sold to Murdoch’s Fox News for \$560 million.

51. Such sites have developed web design and rating and filtering techniques as a means of promoting collaborative discussion, of registering user experience, and as a source of new ideas and technologies. Few of the environmental websites surveyed have sought to incorporate user feed-back and rating systems, let alone construct their sites as a platform for distributed and collaborative generation and exchange of information and advice. There is not yet an environmental equivalent to the open source software systems of Linux. Yet it is this type of 'open knowledge economy' that is transforming fields such as the cultural industries, education and health and is applicable to domestic environmental management.⁷
52. An alternative 'federated' version of this distributed approach is outlined in Appendix 3. It is a community-based approach that draws on the experience of the Canadian Green Communities in this field. It proposes a front end community centred site (an environmental, non commercial version of local post code information services) with a centralised back end responsible for research and site maintenance, training, peer networking and management of national partnerships.
53. The key feature of this approach is that it seeks to use the website not as a stand alone resource, but as an element for the promotion of community-based organisations, which would be responsible for promoting environmental practices locally, giving talks, arranging local partnerships, and delivering selected services.
54. The benefits of this approach are reflected in the high rate of penetration achieved in a number of Canadian municipalities. They have been instruments of local mainstreaming, not just in relation to energy, but water, waste, and transport.
55. The above should be seen not as alternatives but as potential paths of development of green portal. While playing an important role in the concierge service, it should be designed for a much wider range of users, with active hosting and free access.

Low cost finance

56. The ready availability of finance and ease of repayment is an important factor in achieving high take up rates. The Ontario green communities programme in the 1990's negotiated **low interest green loans** from one of the major banks, and in a number of cases was able to arrange for repayments to be made via utility bills. The cost of servicing the loans was wholly or in part offset by savings in energy costs, so that the overall outgoings were contained during the payback period before falling once the loan had been repaid.
57. For this business plan, the initial emphasis will be on negotiating a **green mortgage** supplement, so that the cost of works and loan servicing will be rolled into a mortgage. There are currently no green mortgages of this kind, the three currently

⁷ On open source and open systems and their relevance to learning, the media, and social innovation see G.Mulgan, T.Steinberg and O.Salem, Wide Open, Demos 2005

available offering only to plant trees as a form of carbon offset, or in the case of the Ecology Building Society, to finance radical environmental construction and renovation projects. The introduction of the mandatory energy audit as part of the sale and renting of property provides particular opportunities for a new green mortgage offering, similar to that of the Fannie Mae company in the US.⁸

58. In addition the concierge service will provide a one stop shop for grants advice and assistance in applying, both for retrofits and micro generation, as well as financial advice on the package of measures proposed.

Commissioning and oversight

59. A core offering of the service is the identification of reliable installers and service providers and the supervision and approval of their work. With installation, it is not just a question of listing approved suppliers, and providing performance based ratings (which could in principle be done through on line hybrids combining the rating systems of e Bay and the post code detail of citysearch or upmystreet.). It is rather a matter of actively managing the relationship between proven suppliers and householders in such a manner that there are cost savings through improved work flows for contractors, and an active response to problems as they arise (for example problems of access, or of parking permits in Inner London). These are examples of improved service quality and efficiency through system-level co-ordination.⁹
60. From the householder's point of view, a concierge service should provide not just the confidence of engaging proven suppliers, but the delegation of the scheduling and oversight of work, and of the resolution of problems. While the contracts would remain direct between the installers and householders, pricing would be transparent, and difficulties mediated.

Continuing support

61. Traditional energy efficiency programmes have focussed on one-off retrofits. The wider scope of the proposed service, including micro generation, and the pace of sustainable technical development suggests that a continuing relationship should be aimed for. At its minimum level this would be via a periodic e mail newsletter, but also the availability of touch in phone calls to the concierge service for direction on maintenance issues and new product and practice advice

⁸ Fannie Mae is a Foundation for providing affordable housing and revitalising neighbourhoods. It provides incremental mortgage finance for energy efficiency works on the basis that the resulting saving in energy costs increases effective income and thus the lending amount permitted under given income:loan ratios.

⁹ Another example would be the capacity of a central co-ordinator to arrange for work to be carried out for a number of different clients in the same area, thus reducing downtime between each job.

Service modules and packages

62. The service components outlined here can be regarded as stand alone modules which households can assemble as appropriate. Some may opt for a premium audit, but undertake the other tasks themselves. Others may make their own auditing arrangements, but engage the service for the commissioning and supervision of the installation. The important point is that the offerings are flexible and geared to the householder's own requirements.

63. Initially, it is proposed to test out three levels of service:

A silver service (£350 comprising £200 for the basic audit + £150, less the carbon impact incentive)

- The RDSAP standard energy audit
- Water/waste assessment and advice if financed by interested parties
- Face to face advice by the auditor
- Home assessment software
- Telephone guidance on works and commissioning
- Commissioning
- Access to green mortgage and other low cost finance
- 2nd audit
- Carbon impact incentive
- Continuing support

A gold service (£450 less carbon impact incentive). Modules additional to silver service shown in italics)

- A RDSAP+ *premium audit with blower door test*
- Water/waste assessment and advice if financed by interested parties
- Face to face advice by the auditor
- Home assessment software
- *Home visit by environmental adviser (1.5 hours)*
- *Home environmental report prepared onsite*
- *Face to face navigation of green pages & design of package*
- *Personalised information pack with discount coupons*
- *Six month contract for follow up advice by email and phone*
- Access to green mortgage and other low cost finance
- Commissioning
- 2nd post-retrofit audit
- *Free subscription to e-news with events, new green products and services*

A platinum service (£550 less carbon impact incentive which would be higher if micro-generation installed))

The Gold service plus:

- *Home visit by architect*
- *Consultation service and home visit for households wishing to pursue home renewables:*
 - solar dhw
 - PV
 - mini-CHP
 - windmills
 - geo-thermal
 - biomass from waste wood products

Service integration

64. The different elements of the service will be project managed centrally on the model of the architect or concierge service. For the householder this will mean a single point of contact. Each householder will be assigned a support manager, who will be responsible for co-ordinating advice, commissioning, and scheduling on behalf of the householder, and finding answers to queries.

Design Incentives¹⁰

65. To date, the principal incentives to owner occupiers are free advice (via the EACs) and subsidised (and occasionally free) basic installations, such as loft or cavity wall insulation or low energy light bulbs. The starting point for the proposed service is to design and deliver the service in such a way that it becomes its own primary incentive.

66. Part of the attraction will be the personal support, and low-hassle character of the service, part an increase in comfort levels. For many households these will be a decisive factor in encouraging take-up. But as noted above, the design stage of the project also underlined the importance of making any service aspirational and desirable. This means going beyond basic measures like roof or cavity wall insulation (both of which remain hidden), and introducing items which are tangible. These include:

- devices to monitor and control energy use (a recent trial of 500 households in Ontario, Canada found that low cost energy monitors reduced usage by 7-10%)¹¹
- independent energy statements, showing levels of energy use from all sources, costs, comparisons with previous periods, and with average local, and regional household usage

¹⁰ The examples that follow are illustrated in the Design Council web site futurecurrents.org

¹¹ Toronto Star, 17th December 2005 The 15 month trial used wireless transmission from meters to a mobile indoor monitor, which showed householders their electricity consumption in real time.

- smart switches such as an energy lock which can turn lights on and off at the front door
- internal insulation with wall paper designs
- fashion double glazed windows

67. Some of these are already available (for example, Conran has designed a new uPVC windows). Others are in prototype, and need developing (for example the energy monitors). One of the tasks of the concierge service will be to promote and track product development in these fields, and act as a testing ground for these innovations.

Financial incentives

68. One financial incentive potentially deriving from the energy certificate in the Home Information Pack is the impact of the level of energy efficiency on the sale or rental value of a property. An important part of the programme is the publicising of the financial and comfort implications of energy efficiency, and the promotion of the simplified energy labels (for example through their inclusion as a matter of course on estate agents signs and publicity materials).

69. In addition to this linkage to property values, the prototype and development stages will test out two further forms of financial incentives:

- i) a carbon impact incentive, given at the completion of a programme of work, and monitored through a second audit. The level of the incentive will be determined by the impact on carbon reduction. In Canada the incentive averaged £400 per household, or about 25% of the average cost of works. The current proposal allows for an average grant of £150 per household, which would cover the incremental cost of the silver service.
- ii) negotiated discounts on products, materials and services.

70. Other innovative forms of incentive should also be explored, such as:

- iii) a reduction on council tax bills. Braintree is now offering a £100 rebate for the installation of cavity wall insulation, along with 15 other councils (including the London Borough of Croydon) who provide varying discounts. The scheme is a partnership with British Gas, and provides a model for a form of incentive which has proved effective for middle income households.
- iv) power pensions. This would provide an incentive in the form of a free annual tranche of electricity after retirement age. The cash incentive (plus any financial top up by the householder) would be invested and then converted into a payment to energy suppliers at the time of delivery. The purpose of the

pension would be to allow some of the externalities of home energy improvements to remain with the householder rather than the house.¹²

- v) a financial reward to households by the Government and/or local authorities for attested carbon savings, and the sale of these savings on the carbon trading market
- vi) a new form of energy tariff, with a low price for low volume usage, and steeply rising marginal price (in contrast to the current fixed cost and low marginal price).
- vii) two way energy metres or a high feed-in tariff for micro generation, as in Germany and Spain. This would serve as an incentive to invest in new domestic generating capacity, and also to manage the domestic pattern of energy usage in order to minimise imports from the grid.

Training programmes

71. Four training programmes are required for the prototype and development stages:

- a course of supplementary environmental training for up to 25 of the national pool of energy auditors, so that they can provide a premium audit service.
- a two day course for 360 tradesmen and women, supplemented by specialist courses provided by microgeneration plant suppliers
- a 5 day training programme for 22 environmental support managers
- a 5 day training programme for 10 environmental advisers

A green building academy

72. In the longer term, there is a need for a Green Building Academy which would:

- provide a supply of green specialists
- become a means of diffusing technological knowledge in the industry
- act as a magnet for innovators
- foster new enterprises
- generate a market for new green products
- serve as a meeting point for practitioners in the industry and trainees
- provide material for a 'grand designs' type show like a Jamie Oliver's cookery programme.

¹² See Design Council RED, futurecurrents.org

73. Training colleges of this kind have been pivotal to the success of the industrial districts of Italy, Denmark and Germany. They provide a flow of new skills into their industries, as well as re-creating strong social networks among the trainees and the existing small and medium firms within the industry. This has particular relevance for a fragmented and rapidly growing sector like green domestic products and services.

London as test site

74. There has been strong support for the Deep Service project since its inception from the Greater London Authority, and its associated bodies, the London Climate Change Agency and the London Energy Partnership. Both the Mayor and the Deputy Mayor wish to promote the next phase, and for this reason both the prototype and development stages will be focussed in London.
75. London has 3.1 million homes, of which 59% are owner occupied, and a further 16% private rented. Although this is a lower proportion of owner occupied and private rented homes than the national average, it still plays a major part in London CO2 emissions. Overall, London housing accounts for 44% of the capital's energy demand. But 82% of that (or 36% of London's total demand) is accounted for by 'able-to-pay' households.
76. Much of the housing in the able-to-pay sector is still far below new housing targets. Only one fifth of London's owner occupied homes have a SAP rating of more than 60, and one in seven have a rating of under 30. Some of these homes are not immediately open to the low cost options for improving energy efficiency. Nearly half do not have ready access to lofts, and over half do not have cavity walls. But there are many ways in which energy use can be improved in these houses, and the data suggests that there is still a long way to go in fully insulating those homes which do have cavity walls and access to lofts. The great majority of them are also open to the potential of micro generation.
77. To put the significance of London's able-to-pay sector in context, a 20% reduction in its energy use would by itself come close to the Government's target for domestic energy reduction for the country as a whole for the period upto 2010. Reductions of this order have been recorded by the Warm Front scheme for fuel poverty homes. The task is to match this for able-to-pay households.
78. As indicated the initial focus of the service will be on the opportunities opened up by the mandatory energy audit for the Home Information Pack. This promises to offer a substantial initial market for the new service. In 2005 there were 123,525 home sales recorded in Greater London, or just under 7% of the 1.8 million in the owner occupied sector. This provides a first order of magnitude for the number of energy audits that will be required for Home Information Packs for 2007-8. The audit requirements for the rented sector are likely to at least double that figure in the first year.

London Boroughs

79. It is also important for the project to connect to London boroughs. Local authorities are the statutory authorities for domestic energy efficiency under the Home Energy Conservation Act 1995 (HECA). They have extensive experience in delivering energy efficiency programmes. Most have energy officers, and have close connections to the Energy Advice Centres.
80. Boroughs also have considerable social marketing capacity, which (along with the marketing power of the GLA) will be an important instrument for the spread of the deep service model. In particular they and the EACs can:
- Identify and mail those applying for building control forms
 - Include publicity for the service in borough newspapers, and borough wide mail outs
 - Promote the service among borough resident employees
 - Refer callers through the Energy Advice Centres
81. For this reason it is proposed to work closely on the prototype with the London Borough of Lewisham. Like the GLA, the Borough has been closely involved in the development of the project, and the design phase was undertaken in an Edwardian maisonette in Lewisham.
82. Lewisham is a multi ethnic Borough with a wide mix of housing types, and income levels. Of the 115,000 homes, 27,000 are in local authority ownership, and the great majority of the remainder are owner occupied or privately rented. The Borough Council itself was awarded Beacon Status in Sustainable Energy in 2005/6 and manages one of the five London EACs, and there is strong political backing for the initiative, including a proposal to declare Lewisham an Energy Action Zone.

Marketing

A segmentation approach

83. Market research suggests that there are a number of segments open to a service of this kind:
- Those preparing a Home Information Pack with the intention of selling or renting a property
 - Those moving house, or undertaking major renovations¹³
 - Those having a baby, and concerned about health and comfort levels

¹³ An energy reduction package would not only be offered as a separate retrofit service, but as a component of a more general refurbishment programme. The service would provide a green dimension to a household's alteration and upgrade plans: such as a new kitchen and bathroom, new central heating systems, new windows, the building of an extension, re-wiring, re-roofing, or re-designing the garden.

- Women between the age of 25 and 45 who are more aware of environmental and ethical consumption issues

Initially it is the first two of these that would be targeted.

Points of entry

84. In addition to a general marketing and PR campaign for the development stage, there are five primary points of contact with the target householders at a London wide level:

- Mortgage companies. The intention is to seek a partnership with one or more mortgage companies interested in developing a green mortgage in response to the introduction of mandatory energy audits in June 2007.
- Estate agents. There are only a handful of estate agents which specialise in environmental housing (such as Green Move), but the role of estate agents in administering the Sellers Pack, means that there is scope for them to act as a marketing point for the green makeover service.
- Building control departments. A local authority can identify applicants who apply for building control forms, and supply details of the makeover service along with the forms
- Major employers will be approached to provide service details to their employees, linked as the service is to personal travel plans.
- Utility companies. There is the potential to establish partnerships with current energy providers, as a means of securing EEC funding, of developing a new form of energy statement, facilitating on bill financing, as well as providing a point of contact with householders.

Community-based marketing

85. One of the lessons of Canadian experience, is that community based social marketing has often been more effective than mass marketing in achieving widespread take up of energy efficiency services. It has used partnerships with existing community organisations – municipal government, green groups, credit unions, faith groups, trade unions – to achieve low cost diffusion of the purpose and nature of its service.

86. This has been particularly important for connecting to people who would not otherwise be reached, notably those with English as a second language. Community organisations have helped translate social marketing materials into major languages and can provide interpreters for home visits, and vouch for those inspectors/advisers visiting people's homes.

87. Within any community there are many free media and listings, multiple channels for community outreach, cross marketing with other green goods and services. There is scope for an intense door to door campaign in a small geographic area through two weeks of tables, signs, door hangers or leafleting. Some of the best encouragement is provided through word of mouth, and the local visibility of the service through front of house and lawn signs being used by inspectors and installers, notices in local shops and DIY stores, re-enforced through local radio.
88. A community approach has been successfully adopted by the Warm Front scheme in identifying households eligible for energy efficiency grants.¹⁴

Service development

89. It is proposed to develop the service in two stages:

- i) *a prototype stage* lasting 16 weeks which would trial the service in 40 homes. It will start in June 2006 to coincide with the introduction of the voluntary Home Information Pack. As with all prototyping, the aim is to test out and adjust the service in response to feedback from those receiving and those delivering the service. As the design consultancy Ideo puts it, prototyping seeks to get failure in early.

In this case the prototyping will provide a support service including a premium audit, and specifically test out:

- the take up of the voluntary home energy audit
- the take up rate after the initial audit
- the household's response to the different service packages, and their price
- the level of carbon incentive that would encourage take up
- the results of blower door tests (which will we provided for all households)
- the usability of existing web sites and the proposed temporary portal
- the response to a home visit by an environmental adviser
- the demand for architectural support
- the availability of green trades people
- the supplementary training modules
- the case management system and degree of support requested

- ii) *a proof of concept stage*, lasting 18 months, when the service will be expanded to a target level of 500 homes a month. This stage is designed to test out the organisation, the costs and the economies of scaling up the service.

¹⁴ For a description of the social marketing employed see the annual Warm Front reports of Powergen and the EAGA Partnership, both of them accessible via the DEFRA Warm Front web site www.defra.gov.uk/environment/energy/hees

Finance

90. The development costs are detailed in Tables 1-4. Total *prototype costs* are **£125,440** (Table 1). Just over a third of the cost (36%) represents staffing and administration costs, 25% the initial green pages development costs, and a further 30% the costs of the audit, design, the identification of the suppliers and the financial incentives.
91. The net *proof of concepts costs* are **£1.36 million**, comprising gross costs of £2.7 million or £542 per household, half of which is covered by projected gross income of £1.35 million or £270 per household.
92. The most significant cost are the financial incentives. At the prototype level of £250 per household they would have accounted for 40% of total costs. The figures assume an incentive of £150 per household, less than half the Canadian incentive, but this still makes up 28% of the net costs. Staffing and administration is a similar amount (28%), and the home audit and the green pages accounts for a further 25%.
93. Table 4 shows monthly forecasts, and the changes of net costs with increase of scale. Income per household is held constant, but costs per household are more than halved, as a result of the spread of set up costs and fixed overheads over larger volumes, and because of the increased productivity of support managers. By the end of the 18 months, and excluding the carbon incentive payments, the service is forecast to break even.

Assessment

94. In addition to review by the Steering Group responsible for the overview of the prototype stage, there are four further proposed means of assessment:
- i) an independent panel would be appointed comprising a designer, a senior executive from the consumer service sector, and a specialist from the domestic energy field. The panel would be asked to consider the report of the project, discuss the conclusions with the prototype team, and provide a brief written assessment, with recommendations on the direction of further work.
 - ii) a review session would be held with interested parties from the domestic energy efficiency sector, Government, local authorities, and consumer services.
 - iii) A workshop would be arranged with the Green Communities in Canada who are embarking on a similar initiative, with a view to exchanging experiences.
 - iv) the report of the project would be placed on the websites of the partners to the prototype and open source comments invited.

95. Similarly, funding has been included for a panel and workshops at the end of the scaling stage.

Service delivery agents

96. There are six potential providers of a concierge service:

- existing energy service companies, including those who have been providing retrofit services financed under EEC.
- environmental architects; there is a network of environmental architects (many of them members of the Green Register). As noted, architects providing a service which designs and co-ordinates refurbishment work.
- concierge services, such as Ten UK
- local authority energy service departments, who have got expertise in energy retrofits, and the commissioning and oversight of the installation work.
- environmental consortia of environmental activists, service companies and utilities. This is the model of Green Communities that has been so successful in Canada.
- retail firms with experience of consumer support services, service logistics and home delivery. John Lewis provide an integrated service for fitted kitchens for example. The major supermarkets have extended into home delivery over the past five years, and Tesco runs support services, both for young mothers and in relation to preventative health. There is also the potential for home retailers such as B&Q and Homebase to extend into environmental home service support.

The Prototype

97. For the initial prototype, a partnership has been assembled that includes:

- TenUK as project manager,
- National Energy Services, the energy audit specialists, that has been one of the team responsible for the development of the RDSAP software, and has agreed to undertake the audits during the prototype phase.
- The Design Council
- The Green Exchange network of architects and building service engineers
- The Greater London Authority and its associated partnerships and agencies
- The London Borough of Lewisham
- The Energy Savings Trust

The Proof of Concept Tender

98. On the basis of the results of the prototype, it is proposed that there should be an open tender for the operation of the development stage. The tender will provide a first indication of interest from the range of potential stakeholders specified above.

An environmental support economy

99. The development phase will provide a firmer basis for the estimate of costs and demand. It will be a form of market research in practice, and will also indicate the level of government support necessary for the development of the concierge concept as a mainstream service.

100. By 2008, the success of the project would provide the basis for establishing an economy of environmental support. In contrast to the Energy Efficiency Commitment (based on an obligation on major utility companies to achieve target levels of energy efficiency) or Warm Front (where service providers are franchised by the Government to deliver a free service) a more appropriate model for the able-to-pay sector would be to provide Government support directly to the householder based on the measured energy reductions achieved by them. This would leave open how and what level the support service would be provided. In some cases the householder might choose to undertake the search and commissioning work themselves. Others might require a comprehensive service, and this could be supplied by a variety of suppliers. A support structure of this kind would ensure that the service remained open to small and medium firms.

101. In addition to financial support, such an economy would need:

- Certification standards and a common metrics
- A simplified set of standards for house classification
- Training programmes and certification for environmental installation skills

Conclusion

102. British policy towards energy efficiency has favoured a low cost basic service, delivered free to public housing and to households in fuel poverty. In the form of the Energy Efficiency Commitment, the policy has now developed on the basis of a model developed in other environmental policy fields, where the main delivery agents are private sector companies, in this case the major energy utilities, funded off the public sector books, and mandated to deliver targeted outcomes. The EEC targets now include able to pay households, but the strategy of low cost standardised measures remains. Because of the nature of their product, the utility companies have been strong on billing and maintenance. But they remain utilities providing an intermediate good to the commercial and domestic sectors.

103. The Canadian model has been directed at the able-to-pay sector, with limited public funding, and as a result has developed a deeper, environmentally broader, and more consumer oriented service. It has been remarkably innovative in its range of service packages, in its consumer oriented software, and the structure of incentives, and has successfully promoted a network of community based social enterprises as delivery agents. The limitation of the current Energuide programme has been the inability to integrate auditing, planning, and installation into a single package, so that take up remains modest.
104. This proposal draws on the Canadian experience and outlines a third integrated consumer-led approach (see Appendix 4). It starts not from a prescribed set of measures selected on the basis of cost and environmental impact, but from the interests and aspirations of householders, and of what they would be willing to pay for. It suggests that to make headway in a consumer market, green services need to draw on a range of innovations from the private sector, from social enterprise, as well as the public standing and capacity of the state. But in doing so they need to take on board one of the lessons from similar initiatives such as green products and fair trade over the past decade, that in the field of ethical consumption, quality drives impact.
105. The business concept underlying this proposal is that of a support service. It has been developed by those with commercial experience of designing and operating such a service. The service is shaped to help householders select a bespoke package that would include options for the domestic production as well as the reduced consumption of energy. It would also offer options for reduced waste and domestic water use, and for low carbon transport. The goal of the service is to achieve high levels of penetration as the means of maximising carbon saving, within the constraint of a given level of Government financial support.
106. The key question to be tested out in this development phase is whether the kind of personal, consumer-led service necessary for high participation, can be delivered at an affordable cost. The work to date suggests that design, architectural practice, knowledge management technology, and social economy innovations will all play an important part in the search for a positive answer.

Appendix 1

Energy audits and RDSAP

Types of audit

1. The three main ways of identifying residential energy efficiency measures are:
 - a virtual audit. Where the completion of the form is by the householder
 - a checklist administered by personnel with basic training that identifies a set of standard measures to be implemented where they are not already present (e.g., loft insulation), or where simple conditions are met
 - a full energy audit, delivered by professionals with advanced training in building science, that includes data collection, computer modelling of the house, and customized recommendations.
2. The main advantage of the checklist approach is low cost. However, there are multiple advantages to the energy audit approach that are seen in many jurisdictions to justify the additional cost and which it is proposed to adopt for the Green Concierge Service.

Value of a full audit

3. A full energy audit:
 - identifies retrofit measures appropriate for each particular house,
 - for the homeowner, motivates action by identifying current running costs, projecting potential bill savings, and identifying and sometimes quantifying other retrofit benefits, such as CO₂ emissions reduction, home comfort improvements, and improved resale value
 - provides the homeowner with specific action steps and a target for improvement,
 - gives the homeowner a picture of how well the house performs relative to other houses of a similar age and type
 - for installation contractors, can provide a guide to the work that needs to be done, and information on which to base a price quotation

- can be used to label the energy efficiency of homes offered for sale, creating value for energy efficiency, assisting buyers to comparison shop, and encouraging sellers to upgrade prior to sale
- provides a standardized profile and rating of house energy efficiency to assist in analysing the general condition of existing housing stock and potential for improved performance at a regional or national level
- where a post-retrofit audit is conducted, verifies that the work has been completed, identifies fraud and shoddy workmanship, and confirms the improvement in energy performance
- can be used as a metric for performance-based incentives and rewards

All of these outcomes from the energy audit combine to make it potentially a useful tool in helping to achieve home energy savings.

Energy Audits in the UK: The Home Information Pack

The European Union Energy Performance of Buildings Directive (EPBD), published in January 2003, requires member states to “ensure that, when buildings are constructed, sold or rented out, an energy performance certificate is made available to the owner or by the owner to the prospective buyer or tenant, as the case may be. The validity of the certificate shall not exceed 10 years ...” The EU Directive requires information to enable consumers to “compare and assess the energy performance of the building.”

The UK is preparing for implementation in the owner occupied sector by June 2007. As required by the Directive, a Home Information Pack will be provided by sellers to prospective buyers that includes information about energy performance in addition to a “non-invasive” home inspection (includes visible indicators only, rated on a scale of one-three) with basic information on the age and physical condition of the house. The fee to the seller is expected to be in £500- £600 range.

Firms in the UK Federation of Authorised Energy Organisations, including National Energy Services, worked together to develop the energy audit component, nearing completion. The result, known as RDSAP,¹⁵ is likely to be between the existing SAP level one and SAP level two in sophistication. About 100 data points are collected to create a computer model of home energy use and generate a set of recommendations that can be edited by the professional conducting the energy audit.

The report shows the current rating of the home on a scale of 0-120, organized into broader alphabetised categories A through G, with A being most efficient and G being least. These categories are similar to the efficiency labelling system for UK appliances

¹⁵ Reduced Data Standard Assessment Procedure

and automobiles. The report also shows the potential new rating once the recommended measures have been implemented.

RDSAP will be capable of modelling energy conditions in 97 per cent of the housing stock. According to the NES website, "A full SAP (standard assessment procedure) requires many data items that cannot be seen in a survey (or take too long to collect). RDSAP is an industry-agreed standard set of data items and a standard way of inferring the missing data." RDSAP covers building envelope, heating system, and water heating. It does not include other electricity uses such as lighting and appliances. RDSAP will not include a blower door pressure test to determine air leakage, which is inferred.¹⁶

Initially RDSAP has been approved only for owner-occupied homes; however, a similar system is expected for rental housing. It will provide for the first time a common national energy audit standard. A new version, based on SAP 2005, is expected in Spring 2006.

Delivery of RDSAP

RDSAP will be delivered privately as part of the Home Information Pack by trained home inspectors. Personal interaction with the homeowner is not expected to be a feature of the inspection, which may be organized by the estate agent in the homeowner's absence. The homeowner will receive a copy of the report, which must then be provided to prospective buyers.

Existing building surveyors are expected to account for a large share of the needed supply of 7,000-8,000 inspectors, although it will be possible for contractors to be trained to do the work. Inspectors will be certified by the Awarding Body for the Built Environment, based at the University of Central England, in Birmingham.

Field notes will be collected, then inputted to an online computer program which will ensure instant success in implementing software updates.

¹⁶ Because air leakage in the UK is estimated to account for only about 15 per cent of building heat loss, a blower door test is thought to be unwarranted, although changes to the new building regulations will now require sample blower door testing to confirm adherence to ventilation and air tightness standards.

Appendix 2

Domestic Energy and Green Lifestyle Web Sites.

UK

1. www.est.org.uk/myhome The Energy Saving Trust's site with environmental and cost evaluation of alternative measures, as well as guidance on products and suppliers.
2. www.greenchoices.org A site providing a wide range of information on green products and services, including energy.
3. www.truenet.org.uk The website of the Greater London Energy Efficiency Network, that serves as the central information database of energy-related projects, organisations, documents, funding programmes, events and contacts for London.
4. www.nef.org.uk A site of the National Energy Foundation covering renewables, energy efficiency, consultancy services and education.
5. www.sedbuck.com A government technical website on boilers.
6. www.enkrafthome.co.uk Site of Enkraft, a professional service company that develops and deliver environmental energy projects, writes software, and supplies decision-support tools and information to individuals, business and public bodies.
7. www.greenpages-uk.net A catalogue of green products and services, including energy
Other directories include: www.greendirectory.net www.guidemegreen.com
www.hitfix.co.uk gogreen.cellande.co.uk www.naturalmatters.net
8. www.greenshop.co.uk The product and service directory of the Centre for Alternative Technologies
9. www.greenbuildingstore.co.uk. Established by three builders in Yorkshire, the Green Building store supplies environmental building materials. Its website gives details and prices of the green products and materials it stocks.
10. www.constructionresources.com Site of the Construction Resources Centre in Southwark, London, which gives technical specifications for leading edge environmental products and materials available via the Centre.

North America

11. www.freecycle.org A Tucson originated website that is now world wide centred on encouraging the recycling of unwanted goods

12. www.throwplace.com Another US site for recycling and re-use, that describes itself as an alternative to landfill.
13. www.greenpages.org A site hosted by Co-op America which is a screened directory of green businesses and products.
14. www.worldwatch.org/pubs/goodstuff A World Watch Institute Guide to products
15. www.newdream.org/consumer/ A guide for sustainable consumption
16. www.greenseal.org/about.htm Green Seal is an ecolabelling organisation established in the US in 1990, similar to those in Canada and Germany. It provides product recommendations that meet its screening criteria, runs a sustainable products standards and certification scheme, provides technical assistance to all levels of government on procurement, operations and facilities management. The website carries the technical product reports and recommendations
17. www.mbdc.com The website of Michael Braungart and William McDonough (authors of Cradle to Cradle) and is geared principally at providing green technical services to business
18. www.davidsuzuki.org/WOL/Challenge/Newsletter/oct2004_buylocal The website of the Canadian David Suzuki Foundation which promotes sustainable living
19. www.earth911.org/master.asp A US site to promote recycling
20. www.lesstoxicguide.ca A guide from Nova Scotia on toxic products and non toxic
21. www.smartlivingguide.ca – A Toronto based web site for sustainable living
22. www.greenyourlife.com – A commercial site based in Ontario which provides a directory of green products and services
23. www.kijiji.ca – Free listings for classified ads for reusables and sustainable and services
24. The *Green Shopping Guide* will be the Canadian town Peterborough area's source for finding environmentally sustainable goods and services. You will be able to find everything from building materials to organic food to clothing and household supplies. Learn to buy durable, non-hazardous local products! The parent site, www.peterboroughreuses.com, already attracts clients from all over Peterborough and the Kawarthas, with over 200 visitors using the site daily – each visiting about 40 of the linked pages.
25. GREENIOLOGY. A new Canadian version of a green guide to consumers first

published in Australia in 2003. It contains a range of Canadian information about Energiguide, Ecologo and Canadian household statistics such as water use as well as contacts in North America.

<http://www.planetark.com/generalpage.cfm/newsid/17/newsDate/14/story.htm> The first section of the book is arranged by room: the green kitchen, the green living room, the green bathroom, green office, etc. It suggests that the major impacts of households are energy and water and focussing on these two first will have the most benefit. The second section, Lifestyle, includes green building, green shopping, green grooming and how to have a green baby. The third section, Hot Topics, gives a brief summary of topics such as acid rain, biodiversity, ecological footprint, and global warming and sustainability. Ha, Tany. *Greenology: How to live well, be green and make a difference*. Toronto, ON: Penguin Canada, 2005.
www.penguin.ca/nf/shared/SharedDisplay/0,,214223,00.html

26. US site. www.responsibleshopper.org
27. Vancouver's Social purchasing portal: www.ftcbusiness.org
28. www.spec.bc.ca/greenpages/index.php Vancouver-based – a good, accessible resource.
29. www.greenbiz.ca.gov The site of a Bay Area Green Business programme
30. www.ecolinks.net A British Columbia based information resource for consumers concerned about the effect of their spending on the environment, human rights and animal rights.”

Appendix 3

Environmental webs and networks: a community based option

This proposal builds on the experience of the Canadian Green Communities which is a community based network of local environmental partnerships. The partnerships, among other things, act as delivery agents for the national Energuide programme of energy auditing.

It outlines a web-based informational infrastructure organised at the national and community/neighbourhood levels as a vehicle for generating broader participation in home energy retrofit services.

Content

The proposed website would be a green data base that covers (but is not be limited to) energy efficiency (space heating, lighting and appliances), home- and community-scale renewable energy generation, ecological garden maintenance, non-toxic household cleaners, clothing and cosmetics, water conservation, green building materials and techniques, travel options, food, recycled content and reusable products.

Assessment

The site would not endorse any goods or services, but evaluate promising goods and services against key criteria:

- resource efficiency - waste impacts/durability
- toxic impacts in manufacture, use, and disposal
- energy intensity in manufacture, and efficiency of use
- local manufacture/supply (i.e., number of miles of transport incorporated into the product from point of origin)
- quality
- design
- cost

The user would then be called upon to exercise judgement about what weight to assign to each factor in making a choice.

Organisation

To maintain green how-to information, get this information to people and encourage them to act on it, a federated service model is proposed that features community-based outreach through localized web portals and host organizations, combined with a regional/national "back shop."

i) Local functions and structure. The front-end of the green website would be local. This could be realised through a system of subdomains, e.g. www.hackney.greenchoices.org, www.lewisham.greenchoices.org, www.york.greenchoices.org and so on.

A benefit of a localized front-end is that the information does not float in cyberspace, but is grounded in the communities that it serves. A local front end, combined with a local host organization, helps to ensure local presence, buy-in, and engagement – a sense of identification and connection. This sense of connection is increased when various community partner organizations (e.g. the local authority, residents' associations, ethno-cultural organizations) endorse the site, promote it, and share in the ownership of it.

A local host organization, with its associated network of community partnerships, is needed to promote the site, and deliver green information in non-web-dependent ways. *The service should not be simply passive*, if it is to reach beyond those already engaged in being “green” and adept at using the internet. It requires active outreach, to engage new not-yet-green households. It needs to generate demand, not just serve it.

Community engagement should be promoted through channels such as a column in the community newspaper and other local media coverage, distribution of fact sheets and other print materials, green trade fairs, tables and displays in shopping districts, school programs, traveling exhibits, kids green clubs, speaking engagements, green home visit programs, green advice services, “green tea parties”, workplace lunch-and-learns, community leader engagement, telephone advice lines, information centres and green stores and reuse centres.

Another important function of the local host organization is to identify local sources for green goods and services, to ensure that they are featured on the local site, and to identify locally produced goods and services that should be promoted more broadly.

In Canada, offering free online advertisements for small personal sales and free exchange has also proved effective in bringing a broader range of users to local sites.

It is also hoped that the outreach infrastructure nurtured through this system will take on a life of its own, so for example local organizations will host or otherwise facilitate community-scale renewable energy project. An objective is to mobilize community energies and skills.¹⁷

Centralized functions and structure.

For each community to attempt to replicate an entire site and database locally would involve duplication of effort, and it would be beyond the capacity of most, especially to keep the information up to date over time.

¹⁷ The infrastructure described in this Appendix would be a soft introduction of a Green Communities model in the U.K. See www.greencommunitiescanada.org. The information and outreach system would identify who is keen, who is capable, and who has the requisite social entrepreneurship.

Therefore it is proposed that the back-end functions of this system, including the bulk of research and site maintenance, be centralized.

The principles for the information system will be established centrally, and templates and coaching would be provided for the local front-end portion. (Some commonality of branding, and look and feel could be helpful in the front ends of the site, but is not essential. Localization is more important than standardization or visual polish.)

Local staff will be centrally trained, and provided with a comprehensive how-to manual for implementing outreach activities. The central body will also facilitate networking and sharing among the local host organizations, and organise common programs and services for delivery or marketing locally (for example a home energy retrofit service).

National/regional partnerships will be another central function, to build support and credibility, and a sense of inclusiveness, and also to leverage partner resources. In many cases, organizations have developed excellent information, materials, program designs, etc., but need a community-based outreach system to provide "arms and legs" to get these out on the streets and into people's lives.

Among potential national and regional partners to be organised centrally would be:

- national government – DEFRA, ODPM
- regional bodies such as the Greater London Authority
- service providers – green retrofits/audits/equipment manufacturers/retailers
- national media
- the Energy Savings Trust
- the Green Register
- Green Choices and other green rating/labelling schemes
- Environmental NGOs such as Greenpeace and Friends of the Earth.

The attached table indicates the division of functions between local and central.

Governance

The overall governance would be based on a federated model, with a Board elected by constituents groups, overseeing the central secretariat.

Finance.

An initial challenge fund of £1 million p.a. for three years is proposed, to be allocated through a bidding process to 20 community partnerships. Bidders would need to offer equivalent matching funds, to be supplemented by fee income for retrofits generated.

	Local functions	Centralized functions
Program management	<ul style="list-style-type: none"> • set local result targets • monitor and report results 	<ul style="list-style-type: none"> • establish overall project targets • develop indicators and monitoring protocol • compile and report aggregate results
	<ul style="list-style-type: none"> • develop local Green Choices program, bundling all or some of the elements described below 	<ul style="list-style-type: none"> • training, staff support for program development • peer review and networking
Information service	<ul style="list-style-type: none"> • respond to information requests (telephone, walk-in, email) • develop and maintain front end of website (template provided) • research, writing to localize materials, information as required 	<ul style="list-style-type: none"> • high quality information and resource database (online) • provide template and coaching for local front end • peer networking (electronic) • research assistance/referrals
	<ul style="list-style-type: none"> • public information resource library 	<ul style="list-style-type: none"> • identify selected resources • bulk purchasing and distribution of copies for local libraries
Outreach	<ul style="list-style-type: none"> • print and distribute publications (factsheets, localized green goods and services booklets, prompts, newsletter); e-newsletters 	<ul style="list-style-type: none"> • provide templates, including electronic files for local adaptation
	<ul style="list-style-type: none"> • media coverage 	<ul style="list-style-type: none"> • sample articles/coverage • how-to media training
	<ul style="list-style-type: none"> • newspaper columns • special sections, supplements in local press 	<ul style="list-style-type: none"> • text for local adaptation • exchange of columns from other communities
	<ul style="list-style-type: none"> • community presentations (to community groups, schools) • volunteer training 	<ul style="list-style-type: none"> • presentation templates • presentation materials • training programs
	<ul style="list-style-type: none"> • public events, forums 	<ul style="list-style-type: none"> • speakers' tour, e.g., on ecological footprint • traveling exhibits • database of available speakers
	<ul style="list-style-type: none"> • tables, displays 	<ul style="list-style-type: none"> • materials
Community-Based Social Marketing	<ul style="list-style-type: none"> • recognition programs for green households and businesses 	<ul style="list-style-type: none"> • criteria, templates, signage, training • national, regional recognition programs
	<ul style="list-style-type: none"> • commitment programs • social diffusion programs ("block leaders," neighbour-to-neighbour, green tea parties) • relationship programs (e.g., membership/"core customer" programs) 	<ul style="list-style-type: none"> • resources for program design and delivery, templates, training, peer networking
	<ul style="list-style-type: none"> • product sales (e.g., rain barrels, composters, reusable mugs and bags, vermiculture kits, blue boxes, non-toxic cleaning materials) • sales/distribution of t-shirts, buttons, bumper stickers, signs ... 	<ul style="list-style-type: none"> • sourcing and/or joint purchasing

Models of home energy service

Scheme Features	Low Cost	Canadian Deep Service	Green Concierge
Target population	Fuel Poor	Geographically defined able-to-pay: aim for high spatial take up rate	Market segmentation: aim for high segment take up rate.
Service terms	Free or heavily discounted	Fee	Fee
Service concept	Utilitarian energy efficiency improvements	Economic and environmental lifestyle	Aspirational
Components of package offering	Restricted low cost energy efficiency measures	Environmental package	Environmental integrated with other domestic goods and services
Economics	Tax funded	Householder fee + incentive	Householder fee + incentive + private consumption/purchase economies
Marketing/PR	Via established commercial channels and mass advertising. Limited social marketing	Leafletting/door-to-door canvass/utility bills/social marketing	Media stories/Lifestyle features/celebrity leaders/mainstream intermediaries such as supermarkets/hardware chains/mortgage companies/estate agents/organic food delivery/auto companies/Transport for London/utilities
Initial contact	Resident phone/letter	Door knockers-home auditors	Home audit/environmental adviser/telephone from support manager
Design advice	Few, utilitarian standardised components	Green environment led options	Green consumer-led options as part of makeovers
Metrics	Standardised component estimates, partial, impacts unmeasured	Before and after, bespoke to house, comprehensive	Before and after, bespoke, comprehensive, categorised
Formulation of package	Supplier determined	Householder determined, from green catalogue	Green on line and hard copy catalogue, virtual design programmes, and concierge support
Commissioning and quality control	Mass contract suppliers chosen by scheme funders, with sample quality control	Householder selected, commissioned and supervised without advice (or from approved list). Caveat emptor	Householder selects from concierge offerings that include supervision, and quality control Caveat vendor.
Post works support	None	None	AppleMac-type support and training services
Finance	None	Low cost credit	Part of mortgage + low cost credit
Incentives	Low cost or no cost service	Free design & assessment/ Public subsidy based on energy impact of works	Free or mortgage-connected design & assessment/ Re-categorisation of mortgagee, and property based on energy saving/ package discounts
Means of payment	None	Up front or Utility bills	Rolled into mortgage
Business concept	Free service for low income households funded by tax or quasi tax	Subsidised metrics and works, funded by fees and public finance	Comprehensive support service, using 'lego' principles of mass customisation, and cost reduction by bundling into wider consumer packages