



Helping to inform the Green Deal: green shoots from Pay As You Save

Sutton pilot results and evaluation report

August 2011

BioRegional



Executive summary

This report provides a summary of the Pay As You Save (PAYS) pilot that was undertaken by B&Q, the London Borough of Sutton and BioRegional over 2010 and 2011, with the objective to draw conclusions and make recommendations to inform the development of the Green Deal policy.

The Green Deal will enable householders to improve the energy efficiency of their home, thereby reducing fuel bills and CO₂ emissions. The costs of a Green Deal energy retrofit will be spread out and paid through energy bills and the charge will be attached to the meter.

This is one of five PAYS pilots. PAYS was launched prior to the Green Deal with the overall objective to trial different repayment routes and to test consumer attitudes towards the whole-house retrofit offer and implementation, as well as understand what the barriers and practical considerations were for the partners involved in the project.

A total of 67 homes were retrofitted over two phases, between January 2010 and March 2011, with energy efficiency measures and solar renewable energy technologies.

The average capital spending per household was circa £13,000 and was funded through a 40% grant and an interest-free loan for the remaining 60%, for which householders could choose between a 10-year or 25-year repayment period.

The households that participated in the trial should see a predicted 26% average reduction in the CO₂ emissions of their property.

In all cases (10 or 25-year repayment loan), customers were offered repayments that wouldn't exceed the fuel bill savings they would make after the retrofit measures. However, some customers, because they recognised fuel prices would continue to rise or because they wanted to improve their home or simply to benefit from an attractive financial package (grant and interest-free loan), decided to add measures to their package that meant that the payback would be longer than 10 or 25 years. As a result it was clear that many homeowners are not automatically driven by financial savings.



Installing external insulation:
Step 1: scaffolding erected.



Step 2: Insulation and render is applied to the front and side of the property ready for finishing.



Step 3: The finished job.

Front cover image shows a home that has been fitted with double glazing and external wall insulation.

For homeowners who selected the 10-year loan option, the installed measures delivered higher energy bill savings than the loan repayments in only a quarter of the cases. However, the 25-year payback period resulted in almost three quarters (72%) of the homeowners securing annual savings on energy bills in excess of the loan repayments.

Main findings of the pilot

The overall consensus from the partners was that the project was a success, providing invaluable insights into whole-house retrofits including hard-to-treat measures such as solid wall insulation.

The higher than expected average installation package cost (£13,000 versus the anticipated £10,000), planning permission requirements for certain measures and homeowners making changes to the measures to be undertaken all had implications on the number of homes that were able to be completed during the time specifications for the Sutton trial, which meant that the 100 households target was not achieved.

Whilst participants were generally interested in the financial benefits that the loan offered – for example the removal of upfront capital costs, the grant and the energy savings, the majority of homeowners believed the long term savings were lower than expected. This was one of the key reasons given by the homeowners initially interested in the pilot, who had an energy audit but then declined the offer - representing nearly half the total number of people involved in the project.

However, 28% of homeowners within the pilot chose to go ahead with the shortest payback period for the loan (thereby diminishing immediate savings) and 33% of the homeowners who took the 25-year loan chose packages of measures that meant the repayments were higher than the fuel bill savings. This suggests that some customers are not necessarily driven by immediate financial savings. In fact 41% of all surveyed participants cited reasons for taking part other than financial, such as increasing comfort and using a professional installation service.

Both of the above points suggest that selling home energy retrofit on household bills reduction alone would be misguided and may need to be augmented with other messages around a home's increased comfort as a result of the measures, the upward trend of future energy prices protecting households from increasing costs and reducing our environmental impact.

Homeowners' personal experiences and word of mouth will be important in getting the nation's homeowners to act voluntarily to undertake energy retrofits. The participation of trusted key partners (such as the local authority in this pilot) will give reassurance to the scheme and will generally make it more attractive. A whole house approach managed by a single third party was also a major attraction to those who participated in this pilot. An area based approach was taken, meaning that the project was confined to Sutton, to increase uptake and to benefit from economies of delivery.

Retrofit installers need to understand from the outset that every home is unique and that there won't be a one size fits all energy retrofit solution. This implies that additional costs and time need to be allowed for from the outset of the project.

Finally, the householder needs to be informed not only about the combination of measures that will make the biggest difference to their home in terms of fuel bill savings, but also on the changes in behaviour that will maximise the benefit of these improvements. In addition, clear communication is needed on the timescales and the level of disruption involved in the installation.

Context

Carbon commitments and climate change

If the UK is to meet its 80% carbon reduction commitment by 2050, emissions from homes will need to be approaching zero by this date. Britain's housing stock is old and notoriously inefficient in its use of energy, with domestic homes responsible for 27% of the UK's greenhouse gas emissions. If we are to succeed in reducing domestic greenhouse gas emissions, homeowners need to be inspired and motivated to take action in reducing the energy they use to heat, light and run their leaky homes.

Launch of the Pay As You Save (PAYS) pilot

As part of the Energy Bill legislation being drafted to address how the country will meet its carbon reduction commitments, in December 2009 the previous Government announced a 'Pay As You Save' (PAYS) home energy makeover trial. Five pilot projects were set up around the country conducted by the Energy Saving Trust (EST) on behalf of the Department for Energy and Climate Change. The aim was to test different ways of financing whole house energy retrofit, identify what motivates people to install energy saving measures and the delivery models required to ensure smooth and successful rollout to multiple households.

Gentoo Group, British Gas, Birmingham City Council, Stroud District Council and B&Q with the London Borough of Sutton and BioRegional were selected to run these pilots, with the aim of giving 500 households the opportunity to invest in energy efficiency and microgeneration technologies at no upfront costs.

Whilst the financing mechanisms used in each of the pilot projects differed, the PAYS pilots all had clear and common objectives:

- To understand how a package of energy saving measures achieving higher CO₂ reductions than basic energy efficiency measures could be retrofitted into homes.
- To understand consumer attitudes toward the PAYS offer and test consumers responses to different PAYS mechanics being trialled.
- To test interest in elements of PAYS finance packages, in particular the relationship between repayments and savings.

- To provide lessons on how to market and communicate these finance packages.
- To test which types of partners consumers prefer to make repayments to.
- To test the required levels of subsidy to overcome the barrier of high capital costs for more expensive energy efficiency and microgeneration measures.
- To test the viability of setting up the different finance models with partners and provide recommendations for partner organisations.

Pay As You Save evolves into the Green Deal

May 2010 saw a change of Government and whilst the PAYS trials continued as planned, it is worth noting that since their commencement the current Government has launched a new framework called the Green Deal. The outcomes from all the PAYS pilot studies provide useful insights for the Green Deal. There have also been many policy developments and other mechanisms (such as the Renewable Heat Incentive and Feed In Tariffs) which will be key to creating a successful model for reducing the emissions of UK housing stock.

How the Sutton pilot worked

The partners

The Sutton pilot was unique in several respects: it was the only pilot that was led by a retailer (B&Q); and it had a unique combination of partners - the London Borough of Sutton and independent social enterprise, BioRegional. The partners already had a relationship from being part of a holistic sustainability initiative called One Planet Living for a number of years (www.bioregional.com/oneplanetliving).

The London Borough of Sutton is a renowned, forward-thinking council setting the agenda in sustainability. It won an Environment Agency Environmental Pioneer Award in 2010 for its work on One Planet Living.

The project was also conducted under the guidance and scrutiny of BioRegional. BioRegional, who can already claim some success in using its expertise to help B&Q reduce its own business impacts (with a 20% reduction in absolute emissions since 2006), were able to offer their expertise to this project in

shaping the pilot and asserting their independence in the evaluation of this trial. BioRegional were also instrumental in overseeing the drafting and contents of this report.

The vision for the pilot

In addition to the national trial's overall objectives, the Sutton pilot also aimed to:

- Understand the role that could be played by a major high-street retailer in whole house retrofit installations, including 'hard to treat' measures.
- Test the effectiveness of a partnership arrangement between a local authority, a large scale retailer and a social enterprise.

The aim in Sutton was for 100 homes within the borough to receive a whole house energy retrofit. In order to qualify to be a part of the pilot:

- The property had to be owner-occupied.
- The property had to be situated in the London Borough of Sutton.
- The homeowner had to agree to at least one major energy saving measure.
- The homeowner was willing to agree to a land charge on the property.

Those taking part would have an energy audit carried out at their home to find out what needed doing to their property to make it more energy efficient. This included measures such as improving insulation, draught proofing, changing an old boiler or installing microgeneration technologies like solar photovoltaics (PV).

As part of the pilot, no upfront payment was required from the homeowner and loan repayments were spread over a lengthy period (choice of 10 or 25 years) to enable immediate and significant savings to be made on energy bills.

The guiding principle when recommending retrofit measures was that the loan repayments had to be lower than the fuel bill savings.

Running the Sutton scheme

The homeowner had two agreements – the first with B&Q to supply and install the energy efficiency measures and the second with the London Borough of Sutton for the grant and interest free loan. B&Q was paid by the EST for the supply and installation of

the measures and the home owner was not expected to settle any costs directly with B&Q. The London Borough of Sutton is responsible for collecting loan repayments from homeowners and transferring the funds to the EST.

All works were covered by a B&Q guarantee and each homeowner was provided with a dedicated B&Q project manager to assist with any issues that may have arisen.

Responsibility was shared between the partners as follows:

- B&Q was the lead project partner, responsible for the preparation and delivery of the measures in the households. Parity Projects were subcontracted to undertake the energy audits and reports on behalf of B&Q.
- The London Borough of Sutton was responsible for credit checking the households, drawing up the grant and loan deed, setting up the repayment programme and managing the billing mechanism over the duration of the loan.
- BioRegional assisted with the initial sign up process and were responsible for monitoring, reporting and evaluating the project.

How the repayments work

A 40% non-repayable grant was given to the homeowner. An interest-free secured loan was taken out by the homeowner to cover the remaining cost of the work. The homeowner could decide whether to take the loan over 10 or 25 years.

The scheme allowed in the region of £10,000 per home but there was flexibility in the amount granted, depending on the energy saving measures agreed.

Perceived customer benefits

In short, it was hoped that those taking part in the trial would have a more energy-efficient and comfortable home, which would enable them to start making financial and carbon savings from day one.

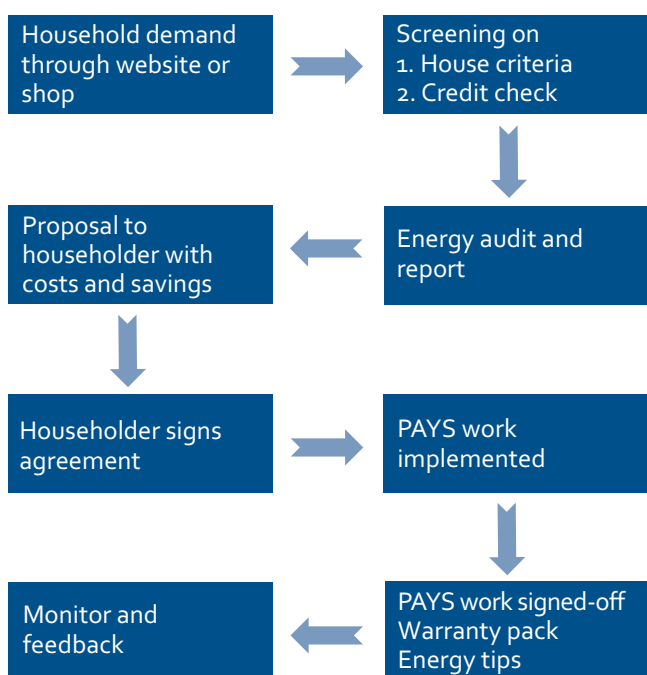


Sutton pilot results

The recruitment process

The PAYS pilot was advertised in a local free newspaper (The Sutton Guardian), online (including on the Energy Saving Trust website) and in the local authority's magazine - Sutton Scene for a week. Due to a high response (around 400 households) there was no need for further advertising, however, radio and in-store advertising through the Eco Shop within B&Q's Sutton store would have been used if take up had been slow.

The diagram below shows the process for selecting and refurbishing the properties:



The Sutton pilot was split into two phases between January 2010 and March 2011. Over both phases, 126 homes received a home energy audit, of which 67 went ahead with the installation of measures. This fell short of the 100 home target for a multitude of unforeseen reasons including the higher than anticipated average cost of the installation packages, the tight timescales set for completing the works and delays to agreed works, caused by changes to work schedules or planning requirement hold ups.

Results of surveys undertaken with homeowners to understand why some homeowners initially engaged in the pilot by undertaking an energy audit but then decided against progressing with the retrofit works are provided later in this report.

Property types

The split between property types was:

- 43 end terrace or semi-detached houses.
- 14 detached houses.
- 10 mid terrace houses.

There was more take up of the PAYS offer by those with properties with a high number of external walls - 85% of those refurbished had at least three external walls. Whilst selection criteria were not determined by the number of external walls, there was a prerequisite for homeowners to agree to at least one major measure. Major measures were determined over the level of carbon reductions they delivered. As a number of homes were solid walled properties, one of the major measures would have been solid wall insulation. However, this was viewed as an unattractive measure by many homeowners due to length of payback and the disruption involved in undertaking the measure.

Types of measures

A total of 12 different measures could be installed, mostly addressing the energy efficiency of the property. Solar hot water was also offered as a renewable technology in the first phase and this was extended to solar PV in the second phase. Unfortunately, due to high demand, the cost of the installation, a capped amount of available spend per property and a concern that this could limit the uptake of energy reducing rather than energy generating measures, solar PV was subsequently withdrawn from the offer.

The most common measures implemented were:

- boiler upgrade - taken up by 74% of customers.
- loft insulation (incl. flat roof) - taken up by 73% of customers.
- solid wall insulation - taken up by 73% of customers of which 45% was external and 55% internal.
- draught proofing - taken up by 72% of customers.

Interestingly:

- Only a small number of homes needed cavity wall insulation (4%).
- Over a third of the homes had an asbestos

survey done. An Asbestos survey was undertaken when there was suspicion of potential presence of asbestos for the type of work that was going to be done e.g. asbestos can be found in Artex ceilings. In total, asbestos was found in five houses.

- Changing heating controls was a measure taken up by over half the householders, as was double glazing.

Investment in households

The average spend on the properties was a little over £13,000 with individual spending ranging between £2,400 and £33,000, depending on the property type, the size of the house and the wishes of the householder. The above costs are provided at their full rate so do not include the deduction of the 4.0% grant.

It is important to note here that the costs of installing the energy saving measures are unlikely to represent the market cost were B&Q to upscale the offer beyond a pilot project. Economies of scale are not apparent in the costs of the measures and this pilot was used by B&Q to help them understand the cost implications of manpower necessary for the installation elements of a whole house retrofit – something not undertaken before. In addition there are also changes currently being made to the supplier obligation funding arrangements (through the Energy Company Obligation), which, if made available beyond the energy companies, could significantly reduce the cost of certain energy saving measures.

Repayment choices of homeowners

With regards to payback times, interestingly 28% of the householders opted for a 10 year repayment loan despite knowing they would be reducing the likelihood of making their loan repayments lower than the fuel bill savings resulting from the installed measures. The remainder of households in the trial selected the 25-year payback option. Both loan options were attached to the homeowner. All householders had the option to make an upfront payment but perhaps unsurprisingly, with 0% APR over the duration of the loan, none of the homeowners opted to do this.

10-year payback results

Homeowners who selected the 10-year loan option clearly displayed motivations other than financial

and cost savings. It was made clear to them that, by selecting this shorter payback period, they would be unlikely to make a net financial gain to their overall household spending over the duration of the loan. In a quarter of the cases though, the installed measures did actually deliver higher energy bill savings than the loan repayments. For the rest of this group, the average loan repayments were £256 higher than the estimated annual fuel bill savings over the course of a year.

25-year payback results

The remainder of homeowners within this trial opted for the 25-year payback option. This longer-term payback period resulted in almost three quarters (72%) of these homeowners securing annual savings on energy bills in excess of the loan repayments. Customers with paybacks longer than 25 years had chosen measures with long term paybacks such as external wall insulation or window replacements. These measures were also chosen by other homeowners where payback was within 25 years. However, the combination of measures and the fact that every house is different means that there is not one single rule as to which combination of measures will bring the best carbon savings. Customers chose to undertake the works in spite of this longer payback either because they recognised fuel prices would continue to rise or because they felt it was necessary repair and maintenance or a home improvement.

The energy savings

CO₂ savings per household are predicted to average 26%, ranging from 6% up to 52% with savings increasing where more measures are installed.

The example below shows, for a little less than average per home spend in this trial, the measures that have been installed and the corresponding savings.

5-bed end terrace house	
Measures installed:	Predicted annual savings:
Boiler upgrade	Fuel savings: £1,496
Loft insulation	CO ₂ savings: 25%
Door replacement	Costs: £9,444 (£3,777 grant + £5,666 loan)
Internal solid wall insulation (1 wall)	
Thermostatic radiator valves	

Participant feedback

Reasons some customers who received an energy audit did not proceed with the retrofit

A survey was undertaken with those householders who engaged with the pilot by having an energy audit conducted but then decided not to proceed with the installation measures. Whilst these people were generally pleased with the quality of the audit report and with the initial process that led to it, there were a number of reasons cited to explain why they didn't proceed with the retrofit:

- The majority thought the financial savings were lower than expected.
- Double glazing was not or only partly included in the package.
- Internal insulation was unattractive due to length of installation time and its disruptiveness.
- An intention to move in the near future making the investment less worthwhile unless the loan would stay with the property.

Pre-installation hopes and fears from participants

A survey was undertaken with 29 participants pre-installation in order to understand what their hopes and fears were around the installation. The survey highlighted the following points:

- The involvement of the London Borough of Sutton made the scheme more trustworthy (83% of the respondents), even though two thirds of the participants would be prepared to have the loan managed by another third party.
- The estimates of future savings on energy bills and their accuracy were judged as important.
- Comfort improvement was another significant motivation for participants.
- The installation service and whole house approach managed by a third party was a major attraction to the scheme (69% of the respondents in Phase 1 indicated that they wouldn't want to do the work themselves - many of the improvements, e.g. installing a boiler, fitting solar panels and external wall insulation are for professionals to carry out).
- The PAYS grant is a valued aspect of the scheme but the fact that costs are spread out whilst people are saving on their bills seemed to be more important.
- Many of the participants planned on being in their homes for the long term. This may have affected the reduced importance they placed on a grant. By comparison, people who may be more likely to move in the near future may require a faster payback for the measures installed which can be achieved through the offer of a grant. This is particularly important where the PAYS repayments are not attached to the property.

The partners aim to monitor and publish the actual CO₂ savings from the homes in 2012.



Solar photovoltaic panels being installed on a slate roof. Left: fitting the brackets and rails, middle: panel front, right: PV generation meter.

Partner feedback

1. **Specification of measures:** The specification of the measures in the retrofit project is key to ensure a smooth process. Particularly:
 - a. It is important to be precise in the specification of the work as otherwise it leaves space for interpretation and becomes the source of potential cost increases, delays and disputes. It might even require additional agreements to be drafted and signed and in some cases additional credit checks to be run.
 - b. The product range offered has to include a wide variety of measures to ensure all house types can be accommodated (for example sash windows). In addition, the work undertaken to deal with character features in homes should not be underestimated. Particularly, the installation of new windows often requires specific designs and a lot of attention to detail.
 - c. The time required for undertaking asbestos surveys in a significant proportion of the houses needs to be planned for at the early stage of each project.
2. **Communication with delivery partners and householders:** It is vital to ensure good communication with householders and manage expectations from an early stage. This can be done through:
 - a. Ensuring a single point of contact throughout the project.
 - b. Involving a trusted partner (such as London Borough of Sutton in this pilot) whose intervention will be helpful when dealing with potential disputes.
 - c. Ensure the training of certain installers who lack experience in dealing with private customers (as opposed to tenants in social housing who do not pay for the work that is undertaken).
3. **Project delays:** There are potentially several sources of delay in a whole house retrofit project. Some of the key causes identified in this pilot were:
 - a. Personal circumstances such as other work being undertaken at the same time, holidays and the indecisiveness of householders to choose measures or amendments to the measures, delayed the work. It was also sometimes difficult to get hold of people during the initial stages of the project (surveys, sign-up, sign-off).
 - b. Planning permission for external insulation is also potentially a key cause of delay in the work to be undertaken. Early discussions with the local authority are necessary as is written confirmation.
4. **Coordination within the Council:** The level of resources (staff and money) available to administer the legal and financial side of the scheme must not be underestimated. The administration of the scheme required the coordination of several different teams across the Council (legal, financial planning, income management and finance), each with their own time and resource constraints. This meant that processing applications (land registry checks, credit checks, drawing up deeds, etc.) did not always move as quickly as desired, especially at the beginning of the project. However, as might be expected, these issues generally resolved themselves once everyone had familiarised themselves with the processes.

Lessons from Sutton PAYS for the Green Deal

Whilst it should be kept in mind that since this trial was conducted there has been a change of Government, resulting in many policy developments and other reward mechanisms being introduced, the Sutton PAYS pilot project does provide some clear insights that may be useful in helping to shape the forthcoming Green Deal legislation. We believe these can be summarised as:

- The offer must be attractive for people to take action, this should include a strong financial component but that need not be the only element which makes the offer attractive.
- Every property and its owners are unique and the retrofit process is likely to benefit by building some flexibility into the finance package and timelines for completions.
- Managing expectations as to what an energy retrofit can deliver and being open and honest from the outset about the retrofit measures and time involved in carrying them out, is important to creating good will and trust.
- Attaching the loan to the property/meter is more likely to incentivise those who may not wish to or are unsure if they will stay within their property for the term of the loan's payback.
- Qualified installers will need to be able to effectively educate customers if these whole house retrofits are to go smoothly and achieve the desired energy reductions.
- Expanding the scope of home improvements that can be done without planning permission to certain energy saving measures (e.g. external wall insulation) will ensure nationwide consistency and prevent delays in achieving the desired roll out.
- There is a need to be careful about the design of the improvements; for example the character of the buildings needs to be kept.
- It is important that the Energy Company Obligation be made available beyond the energy companies in order to fund energy saving measures which may fall outside of the scope of the Green Deal.

Looking forward: expanding on these lessons

Taking an area based approach, such as within a borough, means that local trusted partners can be used and existing sustainability initiatives can be piggy backed which should lead to a greater uptake of the offer. Also a street by street approach is more cost effective for some measures, for instance solid wall insulation. There are also opportunities to mobilise the community to unlock grants, develop skills, provide local employment and build a culture of sustainability.

In the current economic climate with people striving to pay-down debt rather than increase it and juggling many other pressing priorities, people are likely to challenge the offer and ask 'What can this offer do for me?'. If the answer is one bill simply replaced with another of equal or similar value (the energy bill being replaced with the loan repayment) and the only net gain for someone's time and the disruption to their home is a reduction in its carbon - is that enough motivation to act? The answer, from almost half of those involved in this small PAYS pilot sample, is no.

Whilst this trial cannot claim to be representative of the rest of the UK, its findings do allude to what might be needed - a financially compelling package, which is clearly communicated, dispels misconceptions and builds trust. It is delivered by skilled and qualified professionals who not only make changes to the fabric of the house but also inform occupants how simple changes to their behaviour, like turning down thermostats, can also save money. Savings from behaviour change could be included in customer audit reports.

What this evaluation shows are green shoots from this PAYS pilot. Taking these lessons into consideration will help the Green Deal to become a 'Great' Green Deal for homeowners, delivery partners and the planet.

B&Q, the London Borough of Sutton and BioRegional

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Before: Room in roof prior to insulation. Rafters are bare with minimal insulation.



After: Fully insulated rafters with plaster board covering.

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