Programme Area: Buildings

Project: Building Supply Chain for Mass Refurbishment of Houses

Title: Synthesis Report

Abstract:

Please note this report was produced in 2011/2012 and its contents may be out of date. This deliverable is number 5 of 5 in Work Package 5. The aim of work package 5 is to ensure that any mass scale retrofit mechanism designed by the consortium addresses the key needs of the end customer, the building occupant. seeks to conclude Work Package 5 with a summary of the previous deliverables, drawing out key items of learning, highlighting areas that impact wider project aims or ideas and providing a critical evaluation of the work package as a whole. The report contains:

- A summary of the Work Package and its deliverables;
- A final summary of the customer segmentation with segment profiles;
- A detailed summary of potential early adopter segments;
- Synthesis conclusions and recommendations;
- Evaluation of the deliverable and suggestions for future work.

Context:

This project looked at designing a supply chain solution to improve the energy efficiency of the vast majority of the 26 million UK homes which will still be in use by 2050.It looked to identify ways in which the refurbishment and retrofitting of existing residential properties can be accelerated by industrialising the processes of design, supply and implementation, while stimulating demand from householders by exploiting additional opportunities that come with extensive building refurbishment.The project developed a top-to-bottom process, using a method of analysing the most cost-effective package of measures suitable for a particular property, through to how these will be installed with the minimum disruption to the householder. This includes identifying the skills required of the people on the ground as well as the optimum material distribution networks to supply them with exactly what is required and when.

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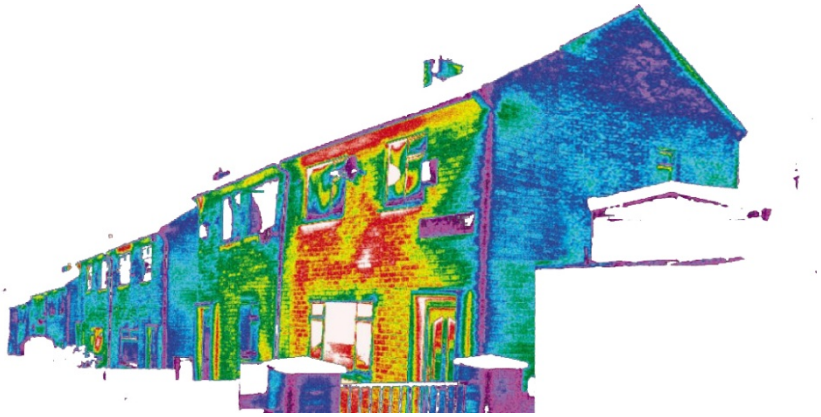


Optimising Thermal Efficiency of Existing Housing

5.5 – Synthesis Report (Customer Value)

Seb Junemann

17 May 2012

Contents

1 Executive Summary

1.1 Introduction

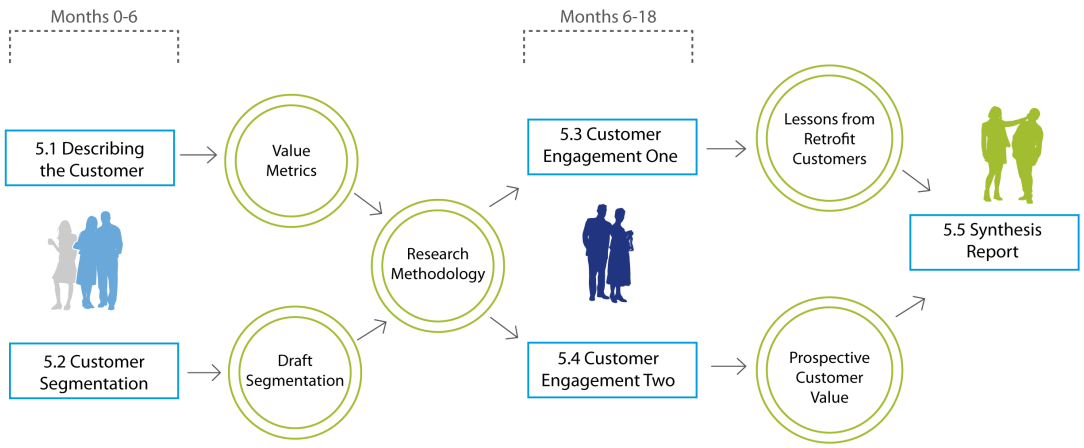
Work Package 5 of the Optimising Thermal Efficiency of Existing Homes Project seeks to focus on the **customer experience and requirements** of domestic retrofit. Deliverable 5.5, Synthesis Report, seeks to conclude Work Package 5 with a summary of the previous deliverables, drawing out key items of learning, highlighting areas that impact wider project aims or ideas and providing a critical evaluation of the work package as a whole.

This report details the following:

- A summary of the Work Package and its deliverables;
- A final summary of the customer segmentation with segment profiles;
- A detailed summary of potential early adopter segments;
- Synthesis conclusions and recommendations;
- Evaluation of the deliverable and suggestions for future work

1.2 Work Package Summary

The work of Work Package 5 is summarised in the following diagram:



- **Deliverable 5.1** engaged key UK stakeholders (those with experience or a stake in current or future retrofit) to better understand customer value in this field. Through this, a list of value metrics was produced to guide further research;
- **Deliverable 5.2** developed a hypothesis segmentation model, using data from Experian and consortium expertise. The ten segments that arose from this work formed the basis of the engagement strategy for the primary research stage;

- **Deliverable 5.3** engaged UK customers that had gone through retrofit or were now living in a retrofitted home. Semi-structured interviews gained qualitative insight and key lessons from their experiences;
- **Deliverable 5.4** formed the majority of the primary research of this work package. Through a mass survey, focus groups and interviews, UK customers were engaged to understand their values regarding retrofit.

Through the course of the research, the segmentation was developed further and enhanced through the findings of deliverable 5.4. The final segment profiles can be found in Chapter 4 of this document.

1.3 Early Adopters

Through the primary research stage, four key segments emerged as early adopters. These were:

The three eldest segments:

- Older Established;
- Stretched Pensioners;
- Transitional Retirees;

And the younger segment:

- Early Entrepreneurs.

As these segments demonstrated a greater level of receptiveness and interest, it was agreed to further investigate the survey data for these segments with a view to developing value propositions that might be more successful in meeting the needs of these segments. Through developing and proving a market with early adopters, it is anticipated that it will be easier to connect with more disengaged segments in future.

This additional research highlighted that, although different, the early adopter segments shared similarities in terms of their preferred value propositions for retrofit, particularly:

- Common top-three motivations for retrofit – namely **"to reduce the energy bill of my home", "to make my home more energy efficient"** and **"to make my home more comfortable"**;
- Shared preferences for advice – **"better information on television and radio"** and **"talking to an energy professional"** with the latter coming from an independent/impartial energy advice service;
- Common attitudes toward the most suitable time for works to be carried out – either "**during major refurbishment works"** or "**when buying a new home"** but *not* **"when selling my home"**;
- A clear preference for **local trades** to carry out the work, as the most popular option across all four. There was further variation in each segment regarding other potential suppliers, such as **energy companies** but none scored close to the top preference of local trades;

1.4 Synthesis Findings and Recommendations

Key areas of learning across the project include:

- **Cash (and comfort), not carbon** – economic concerns (upfront cost, potential financial savings, etc.) remain of the highest importance for customers of all segments, followed closely by cost. No segment is sufficiently motivated to retrofit by carbon reduction or "green" concerns;
- **Early adopters align with existing retrofit customers** – the early adopters that emerged from the 5.4 research stage closely match, by profile, those owner occupiers that have completed retrofit works, interviewed in 5.3. They differ in that those who have gone through retrofit are often more highly educated, more affluent, more motivated by a cause (climate change, peak oil, etc.) and with a deeper personal attachment to their homes;
- **Trust in the trades** – trust in trades remains low across all segments. This impacts on motivation to commission works and to allow works to be carried out without the presence of the customer in the home. Building on local trust networks of friends' and family's recommendations is key to overcoming this;
- **Perception that works have already been done** – a common theme, particularly among early adopter segments, is that works have already been done, making energy-efficiency a less attractive or interesting concept. In almost all cases, these works are of a small-scale nature and not a full-house retrofit. Overcoming this perception in a careful way is key to engaging the early adopters on retrofit.

The key recommendations, therefore, for roll-out are:

- **Advise and engage** – improve advice streams through television and radio; boost accessibility and availability of independent energy advisors; focus the message on cost savings, comfort gains and energy performance; raise awareness on benefits of unfamiliar measures and whole-house retrofit;
- **Deliver best value** – Focus on reducing cost to provide the most affordable, highest quality solutions; design solutions that can be delivered at the most convenient times for the customer; provide policies, frameworks and funding streams that support customers; focus on whole-house solutions that do not need further improvement works in future years;
- **Keep it local** – design supply chains that enable local delivery from local trades; exploit the trust networks of local friends and family; ensure policies and strategies are relevant to local communities and local needs; build trust through local-level application of consistent standards but tailored advice and delivery.

For a more detailed discussion of the conclusions and recommendations, see Chapter 6 of this report.

1.5 Knowledge Gaps and Further Work

Following the work in Work Package 5, the following concerns and knowledge gaps remain:

- Assumptions and findings are based on customers' *perceived* notions of their potential actions – i.e. how they say they will respond may not be the same as how they *actually* respond;
- Customers exhibited low awareness and mixed attitudes towards unfamiliar technologies such as solid wall insulation and ventilation technologies. Further understanding of customers' perceptions, and the effect of information regarding the measures, would help develop value propositions;
- Accurate energy behaviour information (including heating and ventilation patterns) across a broad spectrum of the UK public is lacking. Better information will improve the ability to make more accurate modelling assumptions on energy savings and predict the impact of packages of measures;
- The segmentation remains a basic tool to predict consumer behaviour with regard to retrofit. A more thorough investigation of the segments, particularly understanding variations within segments depending on different factors, particularly regional/geographical differences, would help make the segmentation more useful.

Suggestions for further work therefore include:

- **A large-scale field trial** – to test the predicted and customer-perceived actions in a real setting;
- **Development of the segmentation** – to understand a wider range of variables and attitudes held by each segment as well as any variations within segments presented by other factors (e.g. location or region);
- **Greater investigation of specific technical solutions** – testing specific measures such as solid wall and floor insulations and ventilation technologies with customers to understand how better to sell these as part of a retrofit package;
- **Planning scenarios** – considering and proposing how the segments and customer value market may change over the timescales of a full roll-out of retrofit (i.e. 20 – 30 years);
- **Understanding of applicability to wider systems** – investigating how the solutions proposed by this project integrate with wider energy system solutions, such as power, transport and heat distribution;

For more detail on the knowledge gaps and further work proposals, see Chapter 7 of this report, which also includes an evaluation of the Work Package and its deliverables.

2 Introduction

Work Package 5 of the Optimising Thermal Efficiency of Existing Homes Project seeks to focus on the customer experience and requirements of domestic retrofit. It develops an understanding of the customer (in most cases, the resident), explores the different values held by different segments of the UK population and gains valuable insight into how to design a number of attractive value propositions that will engage the different segments of the UK population.

Deliverable 5.5, Synthesis Report, seeks to conclude Work Package 5 with a summary of the previous deliverables, drawing out key items of learning, highlighting areas that impact wider project aims or ideas and providing a critical evaluation of the work package as a whole.

Work Package 5 Deliverable Summary

Work Package 5's exploration of customer value in retrofit is divided into five discrete deliverables:

5.1 – Defining the Customer: Stakeholder engagement and desk-based research to establish key aspects of the customer value environment;

5.2 – Customer Value Methodology: Development of a segmentation hypothesis to focus future research on key customer groups;

5.3 – Customer Engagement Exercise 1: Primary research (face-to-face, structured interviews) with customers who have gone through a retrofit;

5.4 – Customer Engagement Exercise 2: Primary research (mass survey, workshops and "virtual retrofits") with the wider UK public;

5.5 – Synthesis Report: A consolidating report summarising key research insights and providing recommendations for exploiting customer value.

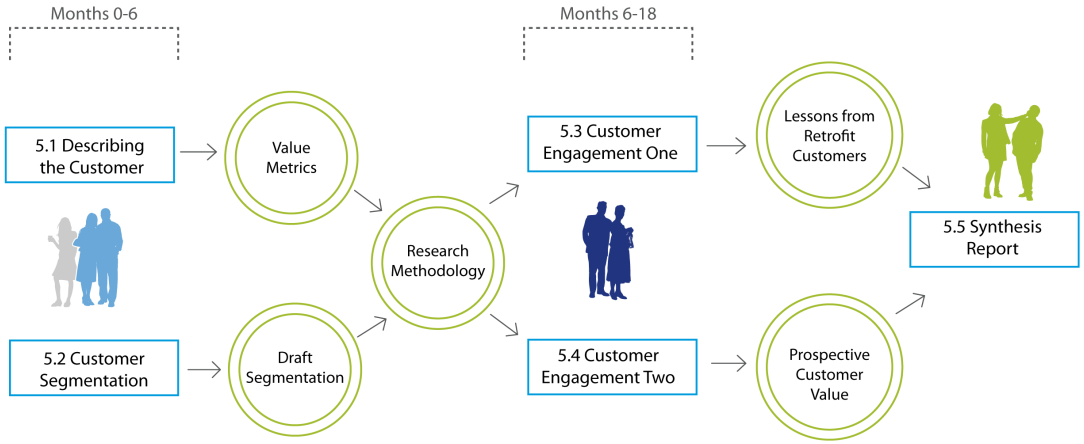
This report will detail the following:

- **Summary of the Work Package** – including a summary of outputs and key findings;
- **A final summary of the customer segmentation** – highlighting key learning validated by the mass scale survey and other research activities;
- **A detailed summary of early adopter segments** – a more detailed profile of the segments identified as early adopters;
- **Conclusions and recommendations** – a comparative review of the findings across the deliverables and consequential recommendations for delivering best customer value in retrofit;
- **Evaluation of the deliverable and suggestions for future work** – critical review and lessons learned from the work carried out and recommendations for areas of follow-up work.

3 Work Package Summary

3.1 Work Package Structure and Rationale

The structure of Work Package 5 is highlighted in the diagram below:



The initial two deliverables sought to lay the base for the customer work by building an understanding of the key value areas and defining the lines of enquiry (5.1) and producing an early breakdown of the UK customer marketplace (5.2). This would allow the primary research stage to interrogate segments that were likely to hold different views and values.

The primary research stage was then broken down into two separate work areas – firstly engagement with customers who had undertaken retrofit already (5.3), building an understanding of their experiences and understanding their value profiles; secondly – engagement with the wider UK public, focusing on our customer segments (5.4), to gain first-hand experience and understanding of their values.

Through close working with the wider project team, particularly Work Packages 3 (Technical Solutions), 4 (Supply Chain) and 6 (Policy and Regulation), the measures, value propositions, supply chain designs and policy interventions proposed by these Work Packages were able to be tested with customers and fed back to the consortium.

3.2 Deliverable 5.1 – Defining the Customer

Introduction

Deliverable 5.1 sought to gain an understanding of customer value from the stakeholders currently (or expected to be in future) delivering retrofit.

Summary of Methodology

After identifying key stakeholders (through a consortium workshop), a series of 1:1 interviews were conducted, either on the phone or in person. The questionnaire was developed with input from consortium partners and focused on the organisations' current and future role in retrofit as well as determining key issues for customers.

Stakeholders included government departments, housing providers, advice providers, retailers, local authorities, trade representative/accreditation bodies and energy suppliers.

A final side-element of the work was to engage with consortium contacts in France and Germany to identify any lessons from these countries' delivery of retrofit.

Key findings

Overall, most stakeholders interviewed viewed retrofit to be a small part of their current business with very low customer interest/demand but one that would grow in importance and prominence over the next decade;

There were mixed opinions about the best way to deliver retrofit in the future – both in terms of who should deliver it (local businesses, energy suppliers, etc.) and how to approach retrofit (street-by-street, on demand or a hybrid);

- Recommendations from stakeholders included:
- The need for a mass programme of training and skills development;
- Greater regulation on the private rental sector;
- Consolidation of policy, advice and funding streams;
- Developing a link between asset value and energy performance;
- Providing a role for a single-point-of-contact project manager to co-ordinate whole-house works;

Lessons from France show that despite a range of existing pro-retrofit policy and funding initiatives (tax credits, VAT reduction and interest free loans), take up remains low;

Germany has seen a much greater level of take-up of retrofit with their federal government funding and advice. Furthermore, energy efficient properties in Germany typically sell for a higher value, demonstrating better-developed customer value in energy efficiency.

Value Metrics

The values described by stakeholders were analysed, weighted and grouped into seven key value areas. The value areas are, in descending order of importance to customers:

- **Economic values** (e.g. cost, impact on asset value);
- **Physical values** (e.g. comfort, aesthetic changes to the home);
- **Process values** (e.g. disruption, duration of works);
- **Product values** (e.g. trust in brand, quality of product);
- **Through-life values** (e.g. ease of maintenance, usability);
- **Social values** (e.g. social status, use of local labour);
- **Related values** (e.g. environmental concerns, competing priorities).

For a more detailed description of the value metrics, see the 5.2 report (where the metrics were further refined from the 5.1 report).

3.3 Deliverable 5.2 – Customer Segmentation

Introduction

Deliverable 5.2 sought to develop a segmentation hypothesis on which to design the primary research strategy. The segmentation needed to identify key segments of the UK population that were likely to present different values and needs with regard to retrofit.

Summary of Methodology

An initial desk-based approach identified a number of existing segmentations for related issues such as environmental attitudes and behaviours, but none that were designed specifically for retrofit as per the needs of the project. As such, it was decided to work with a customer data specialist, Experian, to develop a draft segmentation based on the parameters identified by the consortium.

A cross tabulation of Experian's Mosaic Public Sector segmentation (69 UK segments – categorising individuals according to income, age, social status, etc.) against their GreenAware segmentation (10 segments – categorising individuals according to their environmental awareness, attitudes and behaviours) yielded 690 potential permutations which helped identify significant correlations. From this, 10 segments were identified.

The segmentation was further developed during and following the primary research phase. For a more detailed summary of the segmentation, see Chapter 4 of this report or the full methodology in the main 5.2 deliverable report.

3.4 Deliverable 5.3 – Customer Engagement 1

Introduction

Deliverable 5.3 sought to understand the experiences, values and behaviours of individuals who had already undergone a retrofit. Building on the value metrics, the research tool gained a qualitative understanding of retrofit from the customer perspective.

Summary of Methodology

It was agreed with the consortium that the best way to conduct the research for this deliverable would be through semi-structured interviews with customers. The research tool (the interview script) was developed to cover the key value metrics but also structured around the logical progression of events from the customer perspective, allowing them to tell their own stories of their experiences whilst covering the key lines of enquiry.

Three networks of participants were identified:

- **The Old Home, SuperHome network:** Managed by the Sustainable Energy Academy, this network is made up of owner-occupier individuals who have undertaken deep retrofit works to their homes. Members are encouraged to hold open days and share their knowledge and passion for retrofit with the general public. 26 interviews were conducted with "SuperHomers";
- **Retrofit for the Future:** A TSB-funded programme to retrofit social housing properties to low carbon (80% reduction target) standards. As part of this

programme, a series of post-occupancy interviews were to be undertaken by the Energy Savings Trust. It was agreed to combine efforts to develop a research tool to fit the needs of both projects and avoid duplicating work. 19 interviews were conducted with social housing tenants living in retrofitted homes;

- **Bristol Green Doors:** A network of residents who shared knowledge to carry out, in most cases, less intensive retrofit works to their homes; selected to contrast with the more scattered examples in the other two networks.

Regrettably there were no apparent networks that covered private rental properties. As such, this research could not engage landlords or tenants that had undergone retrofit.

Key findings

Owner-occupier interviewees were typically individuals with mid-to-high incomes, high levels of education and exceptional levels of environmental engagement and motivations (which typically dominated over economic reasons for retrofit);

Most owner-occupiers project-managed their own retrofits and chose local trades to carry out the works. Most were also highly satisfied with the works, despite most suffering high levels of disruption, delays and scope change. The wider findings suggested that this satisfaction may be linked to the high level of ownership that participants took over the process – thus being more accepting and understanding of arising problems;

Social rented tenants were typically satisfied with the end-product but unsatisfied with the process – most of which involved delays, disruption and other scope changes;

Advice provided by the installers or professional services, in almost all cases, was perceived to be poor. Either too little (or none at all) or too much at once. It was recommended that advice should be concise, easy to refer back to, and explained at appropriate times;

Other key recommendations were to design out delays, consider a reduction in VAT on retrofit works, design supply-chain solutions that focus on delivery by trusted local trades and design for minimal maintenance.

3.5 Deliverable 5.4 – Customer Engagement 2

Introduction

Deliverable 5.4 represented the largest package of work in Work Package 5 and focused on conducting quantitative and qualitative primary research activities to understand customer value from the wider UK public who have not, in the main, experienced retrofit.

Summary of Methodology

- **A mass survey –** targeted at 20,000 UK individuals, 2,000 from each customer segment, the survey focused on obtaining qualitative data on retrofit values. The survey was delivered by post or electronically according to likely preferred channels of engagement for the segment in question. 932 responses were received in total, representing a 4.7% response rate;

- **A series of focus groups –** using the segmentation hypothesis, ten focus groups (one per customer segment) were planned in locations that held significant populations of each customer segment. Each focus group was to last two hours and focus on a small number of key lines of enquiry to generate discussion amongst the group. All focus groups were well-attended by participants that matched our segment profiles;
- **A series of semi-structured interviews –** using the 5.3 research tool as a base, a new research tool was constructed to interview a small number of customers in their home. This time, interviews were planned to cover the top house-types in each region (five in England, four in Scotland, three in Wales and three in Northern Ireland) with an even spread of customer segments as a secondary criteria. Each interview was planned to last approximately 90 minutes;

Key findings

As suggested by the stakeholder findings of 5.1, economic values remain the most important factor in customer value for retrofit. Particularly the upfront costs of the works versus the expected savings were important to all segments;

Comfort (mainly thermal, but also air quality and noise) was the other highly ranking value demonstrated by participants. In limited cases, during focus groups with older customer segments, comfort marginally outranked economic concerns;

A limit of £10,000 emerged from discussions across all segments as a threshold beyond which works would be deemed as too expensive;

Awareness of retrofit was typically poor across all segments. Whilst most segments were aware of measures such as loft insulation, cavity wall insulation and generation technologies like solar photovoltaic, almost all research participants were unaware of solid wall insulation;

There were a significant proportion of individuals who perceived that they had already completed the necessary upgrades to their home. When questioned on this, it emerged that this typically involved having had loft insulation installed (in many cases, less than 300mm), double glazing and a recent installation of an efficient gas boiler. Overcoming this perception that works aren't needed is seen as critical to the roll-out of retrofit;

All segments resisted the idea of works that required them to move out of their home and works that took more than two weeks;

Trust remains a critical issue, with many customers feeling distrustful towards the building trades and energy suppliers who are likely to be crucial in delivering retrofit. The most trusted individuals to advise customers on retrofit, across the segments, are typically friends and family;

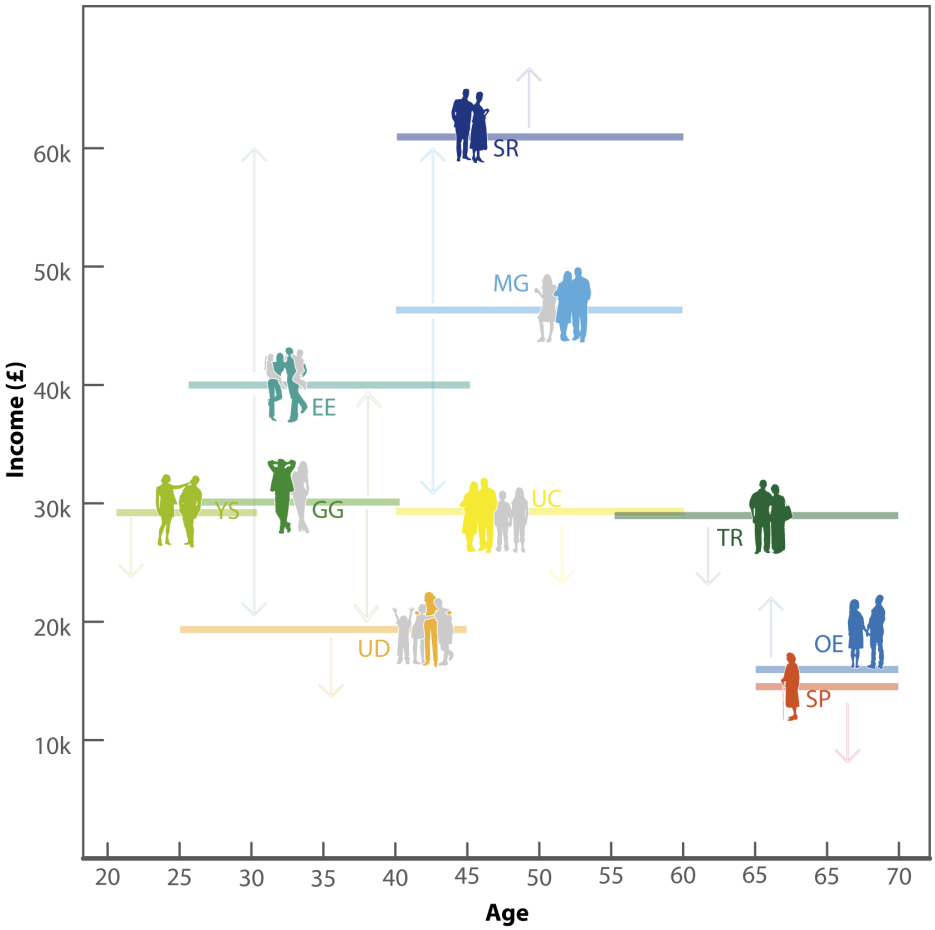
For a more detailed summary of the findings from the 5.4 research, see the main 5.4 report.

4 Customer Segmentation

4.1 Segmentation Summary

The latest version of the customer segmentation is based on a combination of the initial hypothesis, defined using existing Experian segmentations and further explored and developed through the course of the primary research in 5.4.

Summaries of the basic profile information for the segments are shown in the diagram and table below:



KEY

YS = Young Starters	**MG = Middle Grounders**
EE = Early Entrepreneurs	**UC = Urban Constrained**
GG = Greener Graduates	**TR = Transitional Retirees**
UD = Unconvinced Dependants	**OE = Older Established**
SR = Successful Ruralites	**SP = Stretched Pensioners**

CUSTOMER GROUP	AGE	MAIN TENURE	INCOME	COVERAGE %*
Young Starters	< 30	social or private rent	< 30k	2.9 – 8.8
Greener Graduates	25 - 40	private rent or owner occupier	20 - 40k	0.8 – 5.5
Early Entrepreneurs	25 - 45	owner occupier	20 - 60k	2.5 – 10.5
Unconvinced Dependant	25 - 45	social rent	< 20k	2.3 – 4.7
Urban Constrained	40 - 60	social rent or owner occupier	< 30k	4.9 – 7.7
Middle Grounders	40 - 60	owner occupier	30 - 60k	2.7 – 6.9
Successful Ruralites	40 - 60	owner occupier	60k +	2.6 – 7.6
Transitional Retirees	55 - 70	owner occupier	< 30k	1.5 – 2.9
Stretched Pensioners	65+	social rent or owner occupier	< 15k	6.6 – 8.8
Older Established	65+	owner occupier	> 15k	3.8 – 6.7

(*coverage is defined as an estimated proportion of the UK population with a range stretching from higher accuracy (lower number) to moderate accuracy (higher number). For more detail see the 5.4 report)

4.2 Segment Profiles

The following pages provide basic summaries of each customer segment, consolidating the initial hypothesis segment data, primary research data and information on likely house typologies from English House Condition Survey data.

Young Starters

"lower-income, young people living in poor quality rental accommodation"

Household Type	Young singles and couples with no children
Age	Under 30
Tenure	Private rental or social rental
Top Property Types	• Pre-1919 mid-terrace • 1965-1980 purpose-built, low-rise flat • Pre-1919 converted flat
Household Income	Under £30k
Green Profile	Low awareness; low action

- Unemployed or working in low-paid service jobs, with few qualifications;
- Many disadvantaged by drug or alcohol dependence;
- Disengaged with local community / low wider social engagement
- Low access to personal transport and high fuel bills;
- Transient population, rarely staying in the same home for long periods

ATTITUDE TOWARDS RETROFIT

- Very low priority - apathetic towards energy saving;
- View works as landlord's responsibility; sensitive to disruption;
- Low levels of trust in trades mixed with high expectations;
- Likely to expect landlord to coordinate works during other disruptive works (e.g. rewiring, replacement of kitchen or bathroom)

Greener Graduates

"well-educated singles and couples living in flats or urban terraces"

Household Type	Young singles and couples with no children
Age	25 - 40
Tenure	Private rental or owner-occupiers
Top Property Types	• Pre-1919 mid-terrace • Pre-1919 converted flat • Post-1980 purpose-built, low-rise flat
Household Income	£20 – 40k
Green Profile	High awareness; strong attitudes but lacking behaviour

- Urban residents,
- Transient population - in property for 1- 5 years;
- Highly educated – degree or postgraduate;
- Receptive to online communication;
- Early career – intermediate occupations with some self-employed;

ATTITUDE TOWARDS RETROFIT

- High awareness of green issues but resistant to retrofit – prefer smaller-scale, more visible green actions such as cycling or purchasing eco-friendly groceries;
- View works as landlord's responsibility; sensitive to disruption;
- Low levels of trust in trades mixed with high expectations;
- Highly cynical about ability of others to deliver retrofit.

Early Entrepreneurs

"ambitious and successful young couples and families"

Household Type	Couples with no children or a young family
Age	25 – 45
Tenure	Owner-occupiers
Top Property Types	• Post-1980 detached • Pre-1919 mid-terrace • 1919-1944 semi-detached
Household Income	£20 – 60k
Green Profile	Mid/high awareness; mid/high action

- Well educated, career driven individuals;
- Length of residence 3-10 years;
- Urban or suburban locations;
- Many self-employed or senior professionals;
- Embrace technology and online communication;

ATTITUDE TOWARDS RETROFIT

- Interested primarily in financial payback;
- Developing connection with their home – recognise investment potential;
- Likely to be receptive to technological solutions ;
- Prefer local trades to carry out the works but have low levels of trust in the sector

Unconvinced Dependants

"vulnerable families and single parents needing state support"

Household Type	Couples and lone parents with two or more children
Age	25 – 45
Tenure	Social rent
Top Property Types	• 1965-1980 purpose-built low-rise flat • 1945-1964 semi detached • 1945-1964 purpose-built low-rise flat
Household Income	Under £20k
Green Profile	Low awareness; low action

- Large proportion of single females with children;
- High unemployment;
- Claiming multiple benefits;
- Responsive to face-to-face communication;
- No savings or assets; struggling on income;

ATTITUDE TOWARDS RETROFIT

- Resistant to works with no plans for future works;
- Many living with condensation and other problems;
- Low levels of trust, often relating to negative perceptions of works carried out by landlord/local authority;
- Some indication that they may favour energy performance prioritised over cost;

Urban Constrained

"older families in low value housing in traditional industrial areas"

Household Type	Lone parents and couples with dependent children
Age	40 - 60
Tenure	Social rent and owner-occupiers
Top Property Types	• 1945-1964 semi-detached • 1919-1944 semi-detached • Pre-1919 mid-terrace
Household Income	Under £30k
Green Profile	Low awareness; low action

- Low-skilled jobs with some unemployment;
- Length of residence 10+ years;
- Urban or suburban locations, often in Northern England;
- Low levels of education;
- Low levels of savings and assets; struggling on income;

ATTITUDE TOWARDS RETROFIT

- Poor awareness of measures or the need for action;
- Likely to expect works to be fully funded, due to lack of savings or assets;
- Low levels of trust in a broad range of trades;
- Likely to want works carried out in conjunction with other disruptive works;
- Flexible with duration of works, more tolerant than other segments.

Middle Grounders

"Middle-income, middle-aged families living in comfortable suburban homes"

Household Type	Couples with dependent or non-dependent children
Age	40 - 60
Tenure	Owner-occupiers
Top Property Types	• Post-1980 detached • 1919-1944 semi-detached • 1965-1980 detached
Household Income	£30 – 60k
Green Profile	Mid/high awareness; low action

- Mid-level employment;
- Length of residence 10+ years;
- Living in suburban or semi-rural areas;
- Varying levels of education;
- Low feeling of personal responsibility to take positive social actions;

ATTITUDE TOWARDS RETROFIT

- Interested primarily in financial payback;
- Would expect and prefer works to be delivered by a government-created, environmentally-aware organisation;
- Perceive retrofit as someone else's problem and responsibility;
- Would expect works to be delivered very quickly, no-hassle and fully funded;

Successful Ruralites

"rural and suburban families with high incomes, often from city jobs"

Household Type	Couples with non-dependent children
Age	40 – 60
Tenure	Owner-occupiers
Top Property Types	• Post-1980 detached • Pre-1919 detached • Pre-1919 semi-detached
Household Income	Over 60k
Green Profile	Low/mid awareness; mid/high action

- Senior-level occupations with many self-employed;
- Length of residence 6-10 years;
- Rural or suburban locations with many off-gas;
- Asset rich;
- Receptive to telephone and online communication;

ATTITUDE TOWARDS RETROFIT

- Low priority, but ultimately motivated by financial return on investment;
- Very demanding in terms of information required;
- More protective of the aesthetic of their properties than other segments;
- Keen on financial incentives but less motivated than other segments by a potential reduction in VAT, feeling this would be trivial.

Transitional Retirees

"empty-nester owner-occupiers making little use of public services"

Household Type	Couples with no dependent children
Age	55 - 70
Tenure	Owner-occupiers
Top Property Types	• 1919-1944 semi-detached • 1945-1964 semi-detached • Pre-1919 mid-terrace
Household Income	Under £30k
Green Profile	Mid/high awareness; low/mid action

- Close to/recently retired; only 50% in employment;
- Length of residence 10+ years;
- Pensions typically through previous employment over state pension;
- Likely to have savings and a focus on investing for the future;
- Preparing for retirement;

ATTITUDE TOWARDS RETROFIT

- Keen on the financial and comfort benefits offered by retrofit;
- Likely to want a single provider organisation to offer the full package from survey to through-life;
- View final energy performance as a priority over minimising costs;
- Confusion over what to do;

Stretched Pensioners

"older people living on social housing estates with limited budgets"

Household Type	Singles and couples
Age	Over 65
Tenure	Social rent or owner-occupiers
Top Property Types	• 1945-1964 semi-detached • 1965-1980 bungalows • 1919-1944 semi-detached
Household Income	Under £15k
Green Profile	Mid/high awareness; mid/high action

- Many isolated and living alone (separated, divorced or widowed);
- Length of residence 10+ years;
- Claiming state pension and other benefits;
- Limited or no savings;
- Face-to-face communication preferred;

ATTITUDE TOWARDS RETROFIT

- Motivated by concerns for health, comfort and ability to pay energy bills;
- Keen to improve their heating system in the short-medium term;
- Feel works should be overseen by a "UK Council for Retrofit";
- Financial concerns still key as this segment is financially stretched, with no savings to pay for upfront costs;

Older Established

"better-off, older individuals in comfortable retirement"

Household Type	Couples with no dependent children
Age	Over 65
Tenure	Owner-occupiers
Top Property Types	• 1965-1980 detached • 1945-1964 semi-detached • 1919-1944 semi-detached
Household Income	Over £15k
Green Profile	Mid/high awareness; mid/high action

- Comfortable in retirement;
- Length of residence 10+ years;
- Receiving state pension and living off savings and investments;
- Engaged with local community;
- Face-to-face communication preferred;

ATTITUDE TOWARDS RETROFIT

- Keen on the financial and comfort benefits offered by retrofit;
- Often find it difficult to get information on retrofit, despite being generally well-informed on the subject;
- Keen on local trades or service organisations for delivery;
- Many feel they have already completed a retrofit package;

5 Detailed Profiles of Early Adopters

5.1 Introduction

Through the primary research stage, it emerged that a small number of customer segments were more interested in retrofit and more receptive to the value propositions developed by the wider project.

As such, it was agreed to further explore the research findings for these particular segments with a view to enhancing the value propositions and recommendations for rolling out retrofit to the UK public. By focusing on these potential early adopters it is possible to design retrofit solutions that may enable a targeted early roll out to more interested customer groups and build momentum that may help reduce barriers for other segments. By avoiding a focus that attempts to design solutions for a full population including disengaged segments, it is more likely that the UK can build a functional and well-established retrofit market that may reduce some of the key barriers particularly including lack of trust and high upfront costs.

The 5.4 report details the rationale for selection of these early adopter segments. The key four segments identified as strong candidates to target an early roll-out of retrofit include:

The three eldest segments:

- Older Established;
- Stretched Pensioners;
- Transitional Retirees;

And the younger segment:

- Early Entrepreneurs.

The primary focus for developing a better understanding of these segments is a re-interrogation of the mass survey data. However, this chapter will also seek to use information from the focus groups and interviews to support the findings from this analysis. Further analysis of the survey data was conducted by the academic team at UCL.

The analysis focused, in part, on comparing the findings of the survey with hypothesised and existing demographic and housetype information, based on data from Experian from the BRE's EHCS dataset (e.g. do the survey respondents live in the sort of houses we think they do?). However, the key value came from reviewing the questions that covered the segments' attitudes toward retrofit and their energy perceptions and behaviours.

The work highlighted that the survey data broadly matched the expected demographic and housetype data as understood and reported. The remainder of this chapter will focus on summarising the attitudinal and behavioural findings. The full academic appraisal of the data can be found as a stand-alone appendix document that accompanies this report.

5.2 Older Established

Demographic Verification

Older Established responses were, as anticipated, primarily from **over 65s** (90% of responses).

Income was clustered around the **£10,000 - £19,999** band (39%) with the next most common band being £20,000 - £29,999 (21%).

Only 13% of the sample were claiming means-tested benefits, indicating that **income is primarily from pensions and investments** as 90% of the sample were retired.

This segment exhibits a polarised split of education levels, with 37% indicating a degree-level education but 24% having no educational qualifications.

8% of the segment indicated that they were **long-term sick or disabled.**

45% of this segment were the sole occupant of the dwelling, and 50% shared the property with another adult.

Attitudes to Retrofit

This segment believes that an energy efficient home is **more comfortable, warmer, healthier and has lower energy bills** than a non-retrofitted home.

This segment also demonstrated a **positive skew towards appearance and change in property value** with more believing that a retrofitted home would look better and be worth more than a normal home.

The main reasons that this segment would **choose to undertake a retrofit** are, in order:

- To reduce the energy bills for my home;
- To make my home more comfortable;
- To make my property more energy efficient.

The **best time** for this segment to have retrofit works carried out were:

- Moving into a new home;
- Fitting a new kitchen/bathroom;
- Adding a new extension;
- Replacing a heating system;
- During electrical rewiring;
- Replacing a roof;
- Redecorating.

The **worst** time for this segment was when planning to sell their current home.

This segment indicated that they typically found it **easy to access information** on retrofit but still **remained confused** about what to do but better information on television and radio or talking to an energy professional would help this segment decide on how to proceed with retrofit works.

The most trusted sources of advice and information on retrofit were **families and friends** and **consumer/energy advice organisations.**

This segment felt that the following measures were **highly desirable:** loft insulation, cavity wall insulation, pipe insulation, hot water tank insulation, efficient glazing and draught-proofing windows and doors. These measures typically also scored the highest in terms of perceived energy saving potential.

Floor insulation and solid wall insulation were **very unpopular measures** for this segment (both rated the lowest score of "would not like"). They also typically were perceived to have less energy saving potential than the measures noted above.

Most have **no plans to carry out works** over the next three years but those that do have plans are typically planning general decoration and building works or installation of a new boiler/heating system.

This segment showed a reluctance to choose many of the proposed options for carrying out the works, with only **local trades** being identified by more than 50% of respondents as a likely candidate. Focus group and interview research indicated, however, that this segment may also be interested in **specialist improvement franchises** or **energy companies.**

Energy Perception and Behaviours

The dominant heating source for this segment was a **gas central heating system** controlled by a timer. This segment typically heats their home for **11 hours** each day during the colder months and sets their temperature to approximately **20°C**.

When cold, this segment will turn up their thermostat control or put on more clothes. When hot, this segment will turn down their thermostat control or open windows.

This group believes they are average consumers of energy who pay a similar amount of money for energy for a house of similar size.

Most respondents felt their **homes were in good condition**, but those that did report problems most typically reported **condensation and draughts.**

Key Value Proposition Considerations

Keeping costs low remains the primary focus for engaging this segment. Despite many having investments or savings, they are typically on a very low income and will be reluctant to invest in retrofit unless it represents good value for money.

Despite indicating that their preferred time to conduct retrofit works would be during major refurbishment works, very few have plans to arrange such works in the near future. This may present a barrier if this segment is unlikely to feel happy to conduct retrofit works in isolation.

Improving advice streams (quality and clarity, not quantity) via television and radio should be a key priority for engaging this segment. Provision of face-to-face energy advice also seems important.

Tapping into the value placed on advice/recommendations from friends and family seems crucial in gaining the trust of this segment. As the segmentation indicates a strong affinity with the local community for this segment, community events and local “drop-in” sessions could be particularly effective for this segment.

Many retrofit measures were viewed highly favourably by this segment. However, solid wall insulation and floor insulation, both key elements of the retrofit packages being developed by this project, were seen as undesirable. The wider research suggests this is due to a combination of lack of awareness or experience of these products and the perceived disruption caused by their installation. The aforementioned improved advice stream should focus on promoting and demystifying these technologies whilst delivery design should aim for minimising disruption associated with these measures.

5.3 Stretched Pensioners

Demographic Verification

Stretched Pensioner responses were, as anticipated, primarily from **over 65s** (70% of responses – with a further 17% from ages 60 - 64).

Income was clustered around the **£5,000 - £9,999** band (40%) with the next most common band being £10,000 - £19,999 (28%).

45% of the sample claim means-tested benefits, indicating that **income is primarily from benefits and pensions**. However, 23% were still in **some form of employment** (generally part-time).

More than half the sample had **no qualifications**.

17% of the segment indicated that they were **long-term sick or disabled**.

More than 50% of this segment were the **sole occupant** of the dwelling, and 45% shared the property with another adult.

The majority of Stretched Pensioners in the sample were **female**.

Attitudes to Retrofit

This segment believes that an energy efficient home is **more comfortable, warmer, healthier and has lower energy bills** than a non-retrofitted home.

This segment also demonstrated a **positive skew towards appearance and change in property value**, however a significant number (over 10%) answered "don't know" when asked if they thought a retrofitted home would look better or be worth more.

The main reasons that this segment would **choose to undertake a retrofit** are, in order:

- To reduce the energy bills for my home;
- To make my property more energy efficient;
- To make my home more comfortable.

The **best time** for this segment to have retrofit works carried out were generally aligned to the Older Established group – i.e. when other significant refurbishment works were taking place. Furthermore, they also agreed that the **worst time** would be when selling a house.

This segment indicated that they typically found it **easy to access information** on retrofit but a significant proportion (18%) stated that they found it difficult to find credible and relevant information.

Better information on television and radio or **talking to an energy professional** would help this segment decide on how to proceed with retrofit works (showing even more preference than the Older Established segment for these two options – over 80% highlighting them).

The most trusted sources of advice and information on retrofit were **families and friends** and **consumer/energy advice organisations** (as with Older Established) but this group also valued **energy performance certificates**.

This segment felt that **all suggested measures were highly desirable and had very high perceived energy saving potential** (including solid wall and floor insulation, which was unpopular with the Older Established group).

A significant proportion (38%) have (or are aware of – in the case of social tenants) **plans to carry out works** over the next three years – typically general decoration and building works and installation of loft insulation.

Whilst more positive towards different delivery bodies than the Older Established group, Stretched Pensioners also demonstrated an overall lack of trust in most potential installers. Only **local trades** were identified by more than 50% of respondents as a likely candidate. However, the **local authority, housing associations** and **energy suppliers** all were chosen by at least 30% of respondents as "likely" or "very likely" delivery bodies.

Energy Perception and Behaviours

The dominant heating source for this segment was a **gas central heating system** controlled by a timer or by manually switching on and off.

This segment typically heats their home for **11 hours** each day during the colder months and sets their temperature to approximately **21°C** using a single thermostat/controller.

When cold, this segment will turn up their thermostat control or put on more clothes.

When hot, this segment will turn down their thermostat control or open windows.

This group believes they are average consumers of energy who pay a similar amount of money for energy for a house of similar size.

Most respondents felt their **homes were in good condition**, but those that did report problems most typically reported **condensation and draughts.**

Key Value Proposition Considerations

Keeping costs low remains the primary focus for engaging this segment. Whilst many are in social housing, with works carried out by the landlord, costs must be kept low to make them affordable for the landlords to deliver at scale. For owner-occupier Stretched Pensioners, very low disposable incomes and a lack of investments will also present a significant challenge to overcoming cost barriers.

A higher proportion of this segment than the Older Established segment indicated that they were planning works (or aware of plans) over the next three years. Offering a package to deliver retrofit works (particularly alongside the popular answer of "loft insulation" could be a route to engaging this segment.

Improving advice streams (quality and clarity, not quantity) via television and radio should be a key priority for engaging this segment. Provision of face-to-face energy advice also seems important.

Tapping into the value placed on advice/recommendations from friends and family seems crucial in gaining the trust of this segment. With many Stretched Pensioners living alone (widowed, separated or divorced) they may place a higher value on support from friends, family and neighbours.

However, the increased likelihood of social isolation in this segment means that a careful, respectful and customer-focused approach must be taken in interaction with this vulnerable group – from the sales process through installation through post-works.

Of all the segments, Stretched Pensioners exhibited the highest level of enthusiasm for all retrofit measures proposed (both in terms of desirability and perceived energy-saving potential). As such, as long as early interactions are supported by quality advice and information, there does not appear to be any barrier to the packages of measures proposed by this project.

5.4 Transitional Retirees

Demographic Verification

Transitional Retiree respondents were generally older than anticipated, primarily from **over 65s** (93%)[1].

Income was, as expected, clustered around the **£10,000 - £19,999** and **£20,000 - £29,999** band (~45%) with most of the remainder earning above these figures.

Responses indicated an **even split** between those still in **full-time employment** and those that considered themselves **retired**.

Income is from **salaries** and **retirement pensions** (state and personal/occupational).

Respondents were most commonly (43%) educated to **degree equivalent** level.

Approximately **75% share the property with two adults** potentially including an adult child.

Most live in **larger properties** with three or more bedrooms and more than three-quarters **own the house outright** (no mortgage).

Attitudes to Retrofit

This segment believes that an energy efficient home is **more comfortable, warmer and has lower energy bills** than a non-retrofitted home, most also believe that the home will be **healthier** and **worth more**, though with more variability in responses.

This segment demonstrated very **high indecision over whether a retrofitted home would look better or worse** than a non-retrofitted home, with more than 60% choosing the middle option between "better" and "worse".

The main reasons that this segment would **choose to undertake a retrofit** are, in order:

- To reduce the energy bills for my home;
- To make my property more energy efficient;
- To make my home more comfortable.

[1] This conflicts with other data sources on the age definition of this group and should not, without further investigation, be used to redefine the upper age boundary of the segment – it may be an anomaly based on the sample population data provided by Experian and the rest of the demographic data matches expectations for the segment. However, when looked at against the other demographic information, this finding may be explained by a greater propensity for individuals to work beyond state pension age than previously anticipated.

The **best time** for this segment to have retrofit works carried out were generally aligned to the Older Established group – i.e. when other significant refurbishment works were taking place. Furthermore, they also agreed that the **worst time** would be when selling a house.

This segment indicated that they typically found it **easy to access information** on retrofit (~34%), however this is lower than some other segments.

Better information on television and radio or **talking to an energy professional** would help this segment decide on how to proceed with retrofit works, similarly to both Older Established and Stretched Pensioner respondents.

The most trusted sources of advice and information on retrofit were **consumer/energy advice organisations** just ahead of **friends and family**.

This segment only indicated that they **would like half of the proposed measures** – (loft insulation, water/heating pipe insulation, energy efficient glazing and draught-proofing). The remaining measures (floor insulation, cavity wall insulation, solid wall insulation and hot water tank insulation) received the lowest scores indicating that respondents **"would not like"** these measures.

Differing from the survey population, **desirability and perceived energy-saving potential were not strictly aligned** – despite scoring measures like solid wall insulation and hot water tank insulation at the maximum in terms of energy-saving potential, they scored these the lowest in terms of desirability. This indicates that these customers have other significant concerns with these technologies, not related to their perceived energy performance.

A significant proportion (35%) were **not sure if they had plans to carry out works** over the next three years. Those that did have plans were typically general decoration and building works, installation of a new boiler/heating supply and installation of cavity wall insulation.

As with other segments, **local trades** were significantly the most popular choice for potential delivery bodies. However, this segment also showed interest in **energy suppliers** and **large contractors or building companies** – the latter of which was also cited by attendees of the focus group for this customer group.

Energy Perception and Behaviours

The dominant heating source for this segment was a **gas central heating system** controlled by a timer.

This segment typically heats their home for **9 hours** each weekday and **10.5 hours** at weekends during the colder months and sets their temperature to approximately **20.5°C** using a single thermostat/controller.

When cold, this segment will turn up their thermostat control or put on more clothes.

When hot, this segment will turn down their thermostat control or open windows.

This group believes they are average consumers of energy who pay a similar amount of money for energy for a house of similar size.

Most respondents felt their **homes were in good condition**, but those that did report problems most typically reported **condensation, draughts and mould.**

Key Value Proposition Considerations

Although this group is more likely to have savings or disposable income available to fund retrofit (than Older Established and Stretched Pensioner customers), their comparatively lower (though still positive) enthusiasm for retrofit means that costs must be driven down to convince them to purchase.

The lack of appeal of so many of the proposed retrofit measures is a cause for concern when designing packages for this segment – better understanding their concerns over measures such as solid wall insulation may yield ways to overcome these barriers. Better advice to demystify these technologies and highlight their benefits may also improve their desirability.

Improving advice streams (quality and clarity, not quantity) via television and radio should be a key priority for engaging this segment. However, the greater preference for advice from consumer/energy advice organisations suggest that face-to-face advice from these groups would also be valuable in engaging this segment.

As most Transitional Retirees are on the verge of retirement (or recently retired), and similarly just recently, or soon-to-be, empty nesters in larger houses that they own outright, the likelihood of these customers choosing to downsize their home is greater than other segments. Harnessing this trigger could be vital in developing a strong value proposition for these customers – they scored “moving into a new house” as one of the best times to carry out retrofit works.

5.5 Early Entrepreneurs

Demographic Verification

Early Entrepreneur respondents typically were aged **40-44** (45%).

Income was more spread than the other three segments, but clustered around the **£40,000 - £49,999** band with over 60% of responses sitting between £20,000 - £59,999.

Over 90% of respondents were in **full-time employment**.

Approximately 50% of respondents were educated to **degree equivalent** level.

Income is primarily from **salaries**. Less than 4% claim any form of means-tested benefit.

Approximately 80% of households include **two adults and at least one child**.

Most (80%) live in **larger properties** with three or more bedrooms, which the overwhelming majority **own with a mortgage** (85%) - considerably more than the survey average (35%).

Attitudes to Retrofit

This segment believes that an energy efficient home has **lower energy bills** and **uses less energy** than a non-retrofitted home, most also believe that the home will be **warmer, more comfortable, worth more and healthier**, though with more variability in responses than other segments.

This segment demonstrated very **high indecision over whether a retrofitted home would look better or worse** than a non-retrofitted home, with more than 60% choosing the middle option between "better" and "worse".

The main reasons that this segment would **choose to undertake a retrofit** are, in order:

- To reduce the energy bills for my home;
- To make my property more energy efficient;
- To make my home more comfortable.

The **best time** for this segment to have retrofit works carried out were generally aligned to the other early adopter groups – i.e. when other significant refurbishment works were taking place. However, they were more likely to believe that selling a house may be a good time to carry out works than other segments.

This segment indicated that they typically found it **easy to access information** on retrofit (~47%).

As with the other three early adopter segments, **better information television and radio** or **talking to an energy professional** would help this segment decide on how to proceed

with retrofit works. However, this segment also felt that **better information in the national press** may also help them.

The most trusted sources of advice and information on retrofit were **consumer/energy advice organisations** just ahead of **friends and family**.

This segment was **largely indifferent to most retrofit options**, scoring all as 3/5 in terms of desirability, with the notable exception being draught-proofing which was scored as highly desirable. All measures were rated highly in terms of their perceived energy saving potential.

Respondents in this segment were typically (41%) **planning to carry out works** over the next three years. However, these works were typically reported to be general decoration and building works.

As with other segments, **local trades** were significantly the most popular choice as a potential delivery body. However, this segment also showed interest in **energy suppliers** and **DIY stores** (with this option being unique to this segment, of the early adopter groups).

Energy Perception and Behaviours

The dominant heating source for this segment was a **gas central heating system** controlled by a timer.

This segment typically heats their home for **9 hours** each weekday and **10.5 hours** at weekends during the colder months and sets their temperature to approximately **20°C** using a single thermostat/controller.

When cold, this segment will turn up their thermostat control or put on more clothes (but to a lesser extent than the other three groups).

When hot, this segment will turn down their thermostat control or open windows.

This group believes they are average consumers of energy who pay a similar amount of money for energy for a house of similar size.

Most respondents felt their **homes were in good condition**, but those that did report problems most typically reported **condensation, damp and draughts.**

Key Value Proposition Considerations

Of the four early adopter groups, this segment is the group with the highest level of disposable income. However, their high likelihood of mortgages couple with their relative youth and growing families mean that lower cost remains of a key concern to generating appealing value propositions. As such, the key focus must remain driving down costs to appeal to this segment.

The general indifference towards retrofit measures suggests either that this segment has yet to make up its mind on the value of these measures or that they are not as important to them as other priorities. A targeted engagement programme, detailing the benefits and

features of these measures, or solutions that could link with other valued products (e.g. entertainment or electronic technologies) could help overcome this.

Improving advice streams (quality and clarity, not quantity) via national press, television and radio should be a key priority for engaging this segment. However, the greater preference for advice from consumer/energy advice organisations suggest that face-to-face advice from these groups would also be valuable in engaging this segment.

The higher preference for large DIY stores as potential installers suggests that this segment may be interested in elements of retrofit packages that could be delivered DIY, perhaps as part of a whole-house solution that is otherwise delivered by local trades or energy companies. The other potential inference is that this segment associates these organisations with positive improvements to their home and would purchase a solution that was designed and delivered through them.

6 Conclusions and Recommendation

6.1 Synthesis findings across Deliverables and Work Packages

Money and comfort remain the primary foci of all customer segments with regard to retrofit – no segment is significantly motivated by carbon savings;

Those who have already conducted retrofit on their homes typically align with the four early adopter segments identified in this research;

Widespread mistrust of the trades remains a significant barrier;

Early adopter segments are similar enough to design retrofit roll-out solutions that will appeal to all four – focusing on local trades and improved advice;

Many customers (particularly early adopters) believe they have already retrofitted their homes due to small-scale energy efficiency improvements.

Cash (and comfort), not carbon

One of the key findings from the Work Package 5 work is that, across all segments, **money is still the primary focus** of customers in relation to retrofit (from upfront cost to potential savings achieved) followed closely by personal comfort (mainly thermal but also other factors such as air quality, noise and security). From the early insights from stakeholders in 5.1, through to the primary research of 5.4, this finding has been a clear signal of customer value.

One of the important tests that this research sought to carry out was to identify whether the carbon reduction agenda, which drives much of government policy in accelerating retrofit, is enough of a motivator to customers (or a segment/subset of the UK population) to carry out retrofit in their homes. The findings of the work clearly indicate that **no segment is motivated enough by carbon or "green" concerns to carry out large-scale retrofit works to their homes.**

This was a particularly vital finding with respect to the Greener Graduates segment, who were identified, in part, for their higher level of green awareness and behaviour. However, the research confirmed that **this segment was more likely to focus on smaller-scale green actions** (purchasing ethical/organic/ecological goods, cycling, demonstrating energy conservation behaviours, etc.) than longer-term investments such as retrofit. Other barriers particular to this segment, such as a more disconnected, temporary relationship with their homes and a distrust or cynicism over the building trades, further obstruct these customers from engaging with retrofit.

Furthermore, some segments exhibited a **resistance to policies and regulations that are driven by carbon reduction**, due to perceived controversy over the need to tackle climate change or the decision to place responsibility on the UK public to reduce emissions. A

frequent comment in qualitative research activities, across different segments, was that **responsibility should lie with government, other nations, industry or business** to tackle emissions as customers perceived these others as being both more culpable or responsible for the problem and more able to make changes.

This disassociated responsibility also transfers to customers' attitudes towards retrofit measures. With a significant proportion of customers having installed (or been aware of) insulation measures that have been fully or partially funded (through Carbon Emissions Reduction Target and other funding streams), there is an expectation and precedent that **energy-saving measures should be provided and funded by "government" or "energy companies"** with customers failing to see the value of investing themselves.

As such, it is clear that retrofit as a marketable concept should be described not as a carbon-saving or green initiative but as a **financially beneficial, comfort-enhancing upgrade to customers' homes**. The focus for supply-chain and technical design should therefore be in minimising upfront costs and maximising performance. As such, this has informed the work of Work Packages 3 (Technical Solutions) and 4 (Supply Chain) of this project.

The differences between existing and future retrofit customers

Deliverable 5.3 focused on communicating with customers who had undertaken retrofit works to their homes already. Of key interest to the project was whether the individuals surveyed were directly comparable to our customer segments. Considering the owner-occupier customers interviewed, the dominant profiles of these customers were:

- Aged over 65, with a second peak for customers in their 40s;
- Typically, as a household, earning over £30k;
- Highly educated, most to postgraduate level;
- Most working from home;

As detailed in the previous chapters of this report, the primary research with the wider UK public identified four early adopter segments:

- Older Established (Over 65, income more than £15k);
- Stretched Pensioners (Over 65, income less than £15k);
- Transitional Retiree (55 – 70, income less than £30k);
- Early Entrepreneurs (25 – 45, income £20-60k).

There is a **clear overlap with these segments and the 5.3 participants, particularly with regard to the Older Established and Early Entrepreneur segments**. Furthermore it validates the assumption that these segments are valid potential early adopters as they most closely reflect the profiles of customers who have already retrofitted their homes.

The key differences to note between our segments and the owner-occupier customers interviewed in 5.3 are:

- Customers who have undertaken retrofit already are **typically educated to a higher level than the average** for their closest representative segment;
- Existing retrofit customers are **more likely to have been employed in a relevant/related occupation** (engineers, architects, environmental/energy activists);
- Similarly, existing retrofit customers are generally **strong advocates for retrofit and for a motivating cause** such as climate change, sustainability or peak oil;
- Existing retrofit customers typically are at the upper-end of their closest segment's income profile;
- Existing retrofit customers mostly **work from home** and/or demonstrate a **strong personal connection with their homes**.

This final point is a particularly important finding with regard to the wider research conducted in 5.4 – often **a lack of desire to carry out retrofit is accompanied by a lack of personal connection with the home** (as noted previously with respect to Greener Graduates). Both strands of research carried out in 5.3 and 5.4 indicate that people who spend more time in their home (working from home, unemployed or retired), and plan to remain in the same home for the foreseeable future, are more likely to show an interest in retrofit.

This finding may also explain the lack of interest for retrofit in the private rental sector – where **landlords don't typically live in the dwelling** (and, from the 5.1 research – often view the property as a business, not a home) and where **tenants often rent the property for short lengths of time** (less than 5 years), thus failing to generate a strong personal connection with the dwelling.

Trust in the trades

Trust remains a critical issue in the delivery of retrofit on a large scale. **Widespread mistrust of the building trades**, coming from personal experience, experience of friends and family and from the media (particularly television programmes covering "rogue traders" and "cowboy builders") play a major part in shaping the desirability of conducting retrofit works to individuals homes. Furthermore, as previously identified, the customers that are more likely to be interested in carrying out retrofit works are those that have a deeper personal attachment to their homes. For these customers, where their homes are an important part of their lives, the issue of trust is even more vital – customers are even more reluctant to risk a negative experience when the perceived impacts to their personal lives are higher.

Both the 5.3 and 5.4 research highlighted the **importance of personal positive experiences with trades** and **personal recommendations from friends and family** in helping customers select services to carry out retrofit works. The latter of these two, in particular is a very important element to customer value across all segments – customers often place a higher level of trust in advice and input from their friends and family than from specialist experts in the field. Harnessing the power of personal networks is therefore key in rolling out retrofit on a wider scale.

Another key area of trust identified in the 5.3 research is that customers who took personal control over project managing their retrofit projects typically had higher levels of satisfaction than those who took a less direct role. This can be seen as an action from these customers to mitigate the level of trust or responsibility given to others in carrying out retrofit works. However, this is clearly an impractical suggestion to apply to the wider UK population as the 5.3 customers demonstrated high levels of education and awareness supported by the skills to manage these projects.

A further trust barrier to consider is the recommendation from 5.3 customers to allow the works to take place without living in the home during the works, contrasted by the overwhelming resistance to leaving the home in that hands of a contractor demonstrated by customers engaged during 5.4. The primary concern of customers is leaving the home with an unfamiliar and untrusted group of individuals. As such it is important to **further identify ways to help overcome the lack of trust** in this area or to **generate solutions that don't disrupt customers** to the extent reported by many participants of 5.3.

It was identified that **local trades were the most likely to be trusted by customers** – both those who had already had works carried out (5.3) and those that were being asked to consider works (5.4). This supports the notion of personal recommendations from local friends and family in helping customers pick trusted bodies – a local trade is more likely to be known to customers and their peers and be perceived to deliver comparable results (using the same individual workers) than a larger, national provider with a broader workforce.

Designing supply chain solutions that **make use of existing trust networks** (friends and family and local trade experience) and help to reduce perceived trust issues (through positive word-of-mouth or local promotion) can be seen as critical in developing a retrofit supply chain, particularly in the early stages of a mass national roll-out. These findings have thus been well integrated into the work of Work Package 4 (Supply Chain) of this project.

Key similarities between early adopter segments

Though very different in terms of personal circumstances and attitudes, the four identified early adopter segments demonstrated key similarities that enable a more unified or homogenous approach to roll-out than perhaps anticipated. Key similarities include:

- For all four segments, the top reasons to retrofit their home were "**to reduce the energy bill of my home", "to make my home more energy-efficient"** and **"to make my home more comfortable"**. As such, these are the key messages to exploit when promoting retrofit to engage all four early adopter groups;
- Similarly, all four groups suggested that **better information on television and radio** and **talking to an expert energy professional** would help them make a decision on how to retrofit their home. The universal trust in consumer and energy advice bodies suggests that this professional should be an independent expert who could provide impartial advice in a clear, trusted and engaging manner;

- All early adopter segments generally agreed that the **best time** to carry out works would be **during major refurbishment works** (replacing heating system, electrical rewiring, roof replacement, adding an extension, etc.) or when **moving into a new house**. Solutions and value propositions that can integrate retrofit into these trigger points would be valuable in making it easier or more attractive for these segments to take up retrofit packages;
- **Local trades are the clear favoured body** to deliver retrofit for all four early adopter segments. Solutions that focus on delivery by large, national organisations are therefore unlikely to appeal to customers based on the current customer value system. Focusing on supporting local trades to deliver standard packages and connecting them to local customers should form the basis of an effective roll-out campaign.

Perception that customers have already retrofitted their homes

A common finding through the focus group and interview research (that could not have been picked up during the quantitative survey) was that **many customers believed they had already completed retrofit works to their home**. Only during the face-to-face research sessions, where consortium members could explain the concept and scope of a whole-house solution did they realise that this was not the case. In general, this observation came from customers who had recently fitted **a new energy-efficient boiler** and had **grant-funded insulation (cavity wall or loft – with loft insulation often being under the recommended 300mm)** installed.

This perception is a major hurdle to the successful roll-out of retrofit. As customers feel that they have already upgraded their home, **they are less likely to seek out or pay attention to information** promoting further energy efficiency works than those who live in homes with no installed measures. Further adding to the problem is the fact that it is the early adopter segments (particular Older Established) who are most likely to have completed small-scale works and hold this perception.

Improving advice and focusing on explaining the benefits of unfamiliar technologies as part of a whole-house solution are, therefore, vital to convincing early adopters to engage with retrofit.

It is also of importance that **packages of measures be designed to be flexible** to customers' needs where they have already carried out some works. It should not be a feature of packages that they insist and price for the replacement of measures (particularly efficient boilers and double glazing) that are still of a comparable performance to specified measures as part of a package.

Finally, this observation adds validity to the concept of delivering whole-house "one-hit" solutions, **avoiding the need to return to properties in future years** to make further improvements. Customers are likely to be further confused or resistant if they are told in future that their retrofitted home needs to be brought up to higher standards of energy efficiency.

6.2 Key Recommendations for Roll-Out

Based on the synthesis conclusions, the following key recommendations should be considered in preparation for a large-scale roll-out:

Advise and engage

- Improve advice streams through television and radio;
- Boost accessibility and availability of independent expert energy professionals;
- Focus the message on cost savings, comfort gains and energy performance;
- Raise awareness on benefits of unfamiliar measures and whole-house retrofit.

Deliver best value

- Focus on reducing cost to provide the most affordable, highest quality solutions;
- Design solutions that can be delivered at the most convenient times for the customer (e.g. alongside other works);
- Provide policies, frameworks and funding streams that support customers and overcome barriers such as upfront cost;
- Focus on whole-house solutions that do not need further works in future years.

Keep it local

- Design supply chains that enable local delivery from local trades;
- Exploit the trust networks of local friends and family through word of mouth or policies that encourage people to work together;
- Ensure policies and strategies are relevant to local communities and local needs;
- Build trust through local-level application of consistent standards but tailored advice and delivery.

7 Lessons Learned and Future Work

7.1 Evaluation of Work Package 5 Deliverables

A closer working relationship between Work Package leaders in the later part of the project ensured a coherent and integrated direction for the project;

A project directory of stakeholder contacts would have aided the project;

Experian proved a valuable but challenging service provider;

Greater clarity on dissemination would have helped to more effectively gain value from external stakeholders;

Focus Groups UK provided excellent service in provision of market research recruitment services.

Overall, the work of Work Package 5 was carried out successfully, on budget and within acceptable timescales in order to ensure the ability of the wider project to utilise the valuable learning from this customer research.

Across the deliverables, a key area of strength came from the second year of the project, where a closer working relationship with the other delivery work packages (notably WP3 and 4), supported by weekly meetings, ensured a coherent and integrated direction for the project work. Future ETI projects, particularly those involving a varied range of activities, should seek to follow this approach to get best value, ensure collaborative working and avoid duplication.

Lessons Learned – 5.1 Defining the Customer

- Developing the stakeholder contact list and lines of enquiry with the wider consortium enabled the stakeholder interviews to be planned and conducted rapidly;
- Certain stakeholders proved difficult to gain access to (both in 5.1 and for other Work Packages involved in stakeholder engagement activities). Better exploitation of consortium contacts may have helped this;
- A project directory of stakeholder contact details (including details of when they have been contacted and by who) would have been a useful resource for this project as similar stakeholders from 5.1 were needed for later deliverables in other work packages;
- Telephone interviews, whilst not initially preferred for the work, worked very effectively, could be recorded for write-up purposes, and enabled access to stakeholders who may have been reluctant to take time to meet in person. Telephone interviews also preserved project costs, avoiding the need to use travel and subsistence more than necessary.

Lessons Learned – 5.2 Customer Segmentation

- Identification of suitable consortium support for the development of segmentation modelling was poor. Peabody, BRE and UCL had limited experience with this area and took time to develop the necessary skills to build a hypothesis. Identification of expertise from EDF's customer insight team took too long. However, once identified, this resource was able to be used very effectively in dealing with Experian to build a customer segmentation hypothesis towards the end of this deliverable. Better understanding of consortium resource at the outset would have mitigated the initial delay;
- Experian proved a challenging provider of services throughout the project. In 5.2 they were selected to provide data from which the consortium could draw out a segmentation hypothesis. Whilst the data obtained was satisfactory for purposes, much of the early conversations focused on them trying to sell us more than we needed. A greater understanding and clarity from the consortium on specific requirements of Experian would have made this process easier;
- The standard license agreement for data from Experian was passed to ETI's legal team for interrogation for approval before signing off. This proved a vital step as, during the second year of the project, Experian suggested that the segmentation would need to be destroyed upon expiration of the license period (1 year) as it was built on Experian data. However, the clauses inserted by ETI's legal team preserved the intellectual property of the segmentation and confirmed that although the licensed, source data needed to be destroyed, the segmentation that was derived from the data remained the property of the project. Based on this experience, it is strongly recommended to inspect the terms of any future contractual agreements with Experian and other organisation, to ensure retention of IP rights.

Lessons Learned – 5.3 Customer Engagement 1

- An early decision in this deliverable was to streamline the 5.3 work with external post-occupancy interviews planned by the Technology Strategy Board and delivered by the Energy Savings Trust. Whilst a well-reasoned decision, poor management of the interview development and planning of the process by the external parties led to extensive delays which impacted the ability of 5.3 to deliver on time. Little could have been done to mitigate this issue as the ETI project had no direct control over the external work. Future projects should be aware of the risk of relying on such external work and weigh it up against the potential benefits in such situations;
- Engagement with owner-occupiers through the Old Home Superhome network introduced problems due to the network's owners showing reluctance to allow commercial organisations to deliver the research. The agreed solution was to exchange consortium resource for funding to allow the network to conduct interviews themselves, supported by resource from Peabody (whom they supported due to Peabody's charitable/third-sector status). Flexibility within the consortium to meet this challenge ensured that the deliverable was still able to proceed effectively;

- A further issue in gaining the trust of the Superhome network came from a lack of clarity in the dissemination of project results. The Superhome network were unhappy not to be freely offered the full results of 5.3 in return for their assistance and participation in the research. The solution was that consortium members were required to negotiate with the network from a middle-man position where there remained a lack of clarity on the ETI's preferred options regarding dissemination. A satisfactory solution was reached but the negotiations introduced delay. A greater level of clarity on dissemination from the ETI or the offer of a direct client contact to answer third party requests on dissemination (eliminating delivery partners as middle-men) would help here.

Lessons Learned – 5.4 Customer Engagement 2

- Once again, services provided by Experian introduced problems into 5.4. Experian's role in this deliverable was to provide address and email data in order to contact 2,000 of each of the customer segments. They provided advice on engaging the different segments including advice on electronic engagement (via email) and offered to email the survey directly for a small additional cost, reducing the project's administrative burden. However, it emerged that the addresses Experian were using were self-selected members of a market research mailing list (who still, however, fit the segment profiles), not random members of the public. Furthermore, the emails showed very low typical rates of opening and even lower rates of response – that this was typical of similar campaigns run by Experian was actively concealed by them during the planning stage despite being aware of the project's target response rates. The matter was resolved by bringing Experian in for an emergency meeting where they agreed to run a second electronic run and provide postal addresses for another 10,000 individuals free of charge (see next point). However the printing and mailing added cost to the project. As before, a much tighter control over this contractor is recommended if utilised in future, specifying expectations and requirements in high detail;
- The proposed solution to the problems identified above was to submit a further 10,000 one-page letters to individuals with a weblink written in the text, requesting participants to manually type the address into a browser to reach the survey. This solution surprised very effective at gaining more responses from customers, typically attracting a higher response rate than standard electronic engagement. Use of a personalised letter on headed paper was also cheaper than printing and posting a paper questionnaire with a prepaid return envelope. This method of data capture should be considered by future research projects;
- It was identified during the deliverable that a specialist recruiter was necessary to get members of the public to attend focus groups. A brief procurement exercise, comparing quotes and checking references led to the appointment of Focus Groups UK (FGUK). The service provided by FGUK proved to be exceptionally good. A single point of contact managed the recruitment project from start to end and the quality and attendance of candidates was excellent. FGUK therefore come highly recommended for future projects requiring recruitment of members of the public for social research.

7.2 Remaining Knowledge Gaps and Future Work

Findings remain based on customers' perceived actions, not real purchase behaviours;

Low customer awareness and low desirability of measures such as solid wall insulation needs further understanding and investigation;

A large-scale field trial is recommended to test customer value assumptions;

Further development of the segmentation is recommended;

Future scenarios and their impact on the customer segmentation should be considered;

Customer value in retrofit needs to be linked to the wider energy system (including electricity and transport) to align future delivery of energy services.

Summary of remaining knowledge gaps

- The key concern with the outputs of this work package is that the recommendations and insights from those engaged in 5.4 are based on customers *perceived* expectations of how they may act in future as opposed to real customer purchase behaviours. That what people *think* is different to what they *do* is a major concern for building large-scale preparations for a national roll-out. There needs to be more certainty that customers will respond to value propositions for business to invest in building a new supply chain and developing skills;
- The research highlighted a mixed awareness of certain technologies with a particular lack of understanding of technologies such as solid wall insulation and ventilation technologies. Whilst these technologies were explored with customers, they remained difficult to interrogate due to customer unfamiliarity. Given the importance of these technologies (particularly solid wall insulation) a better understanding of customer value responses to these specific measures would be very useful.
- A further gap in knowledge surrounds accurate energy behaviour information across the full spectrum of the UK population. A clearer understanding of behaviour would enhance the ability to develop more reliable building physics models and thus provide better estimates of savings. A greater understanding of how customers interact with their controls, how they ventilate their homes, how much/often they heat their home and their routine patterns of fuel use would allow businesses and services to develop products and solutions that are better tailored to customers needs;
- Particularly difficult in the work of 5.4 was working to gain insight from customers on a concept that was difficult for many to fully grasp and

understand due to lack of broad awareness on whole-house retrofit solutions. Asking detailed questions of customers on a potentially abstract concept required effort in framing the question. Due to the requirement to ask customers questions on something they were only just learning about, further concerns are raised over the likelihood of customers to behave in the manner they may suggest during a research engagement activity;

- A broad understanding of UK-wide customer segments has proved a useful output of this project. However, the work has not had the opportunity to fully explore variation within the segments, particularly considering regional and geographical variations. For instance, are Older Established customers living in rural Scotland significantly different in their attitudes, or aspects of their values, than Older Established customers living in Bournemouth, on the South coast of England? Are Early Entrepreneurs living in North London different to Early Entrepreneurs living in semi-rural, off-gas parts of Northern Ireland? A greater understanding of regional impacts on the segments would prove interesting in shaping local roll-out of retrofit.

Recommendations for future works

- **A large-scale field trial -** Key to obtaining a more solid understanding of customer value in terms of retrofit is the need for practical, real-world evidence of customer purchase behaviours relating to retrofit. A large-scale trial (which may artificially create some of the supply chain, technical and regulatory conditions recommended by this project but enable customers to enter the market freely) will help validate and test many of the recommendations and expectations raised in this work package. The benefit of a large-scale trial to validate the findings of the other Work Packages (suitability of technical solutions to property archetypes, accuracy of the thermal model, feasibility of supply chain options, etc.) should also be considered. Finally, a large-scale field trial will enable customers to recognise the tangible aspects of retrofit rather than engaging them on an explained, sometimes abstract, concept;
- **Development of the segmentation** – the work carried out in developing the customer segmentation and value profiles of different segments of the UK public has been very useful to shaping and steering the work in this project. However, due to the resource availability, a fully detailed segmentation model was beyond the scope of this project. A segmentation which covers a broader range of descriptive variables and can be used as a tool to investigate high resolution, small geographic areas for planning a field trial or roll-out would be very useful. Further research into geographical/regional variations within segments would prove useful too.
- **Greater investigation of specific technical solutions** – engaging customers on solid wall and floor insulation and ventilation technologies would help add value to the findings of this research. Particularly understanding the acceptability and perceived cost/benefits of mass application of solid wall insulation, particularly would be important to developing understanding of customer value. I.e. how receptive would specific customer segments be to the

idea of covering the majority of the UK housing stock with external solid wall insulation?

- **Planning scenarios** – building on this work and looking forward, it would be extremely useful to investigate how segments may change over time or how the proportions from one segment to another may grow or shrink over time (i.e. will there be a higher percentage of Middle Grounders in 20 years time?). Considering this as part of a long-term roll-out and investigating potential marketing strategies would help develop a strategic direction for future customer engagement activities. Fortunately, this work area has already been developed and planned as part of ongoing work in deliverable 3.5 of this project.
- **Understanding of wider systems** – this project has focused exclusively on domestic thermal efficiency, particularly focusing on space heating efficiency and with a secondary consideration of hot water systems. However, this remains a small part of the wider UK customer energy profile. Understanding and developing solutions that consider electricity use and transport as well as heat is vital to the future energy challenges facing the UK. Using the insight from this project and this work package, a greater level of customer insight is needed to determine whether the segmentation applies to the wider scope described here. The ETI's Smart Systems and Heat programme will seek to achieve this understanding and insight. However, it is important that the lessons and insight learned from this project be integrated into this ongoing programme of works to obtain best value and avoid duplication of work.

Appendix A – Segmentation References

The following table details the Experian cross-tab references upon which the ETI segmentation hypothesis is based at the highest resolution level.

The two segmentations used for the purposes of the cross-tabulation were Experian's **Mosaic Public Sector** (69 groups) product and their **Green Aware** (10 groups) product.

References are in the format [Green Aware Segment Number]/[Mosaic Public Sector Number]

Segment name	Cross tab references
Older Established	3/5; 3/47; 3/52
Stretched Pensioners	4/49; 3/54; 4/56; 4/59; 4/67
Transitional Retirees	6/7
Early Entrepreneurs	7/18; 7/23
Urban Constrained	9/45; 9/48; 9/50; 9/51; 10/50
Greener Graduates	1/26
Unconvinced Dependants	9/68; 9/69; 10/68; 10/69
Middle Grounders	6/16; 6/17; 6/21
Young Starters	9/43; 9/44; 10/43; 10/44
Successful Ruralites	5/1; 5/4; 5/13; 5/15