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The DEFACTO Field Trial: Methodology and Data Sets

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The DEFACTO Field Trial: Methodology and Data Sets

Appendix B

Haines VJ¹, Allinson D², Beckhelling J², Mallaband B¹,
Beizae A², Morton A¹, Porritt SM², Li M², Wright D²,
Foda E², Hallin S¹, Loveday DL² and Lomas KJ²

¹ Loughborough Design School, Loughborough University, LE11 3TU

² School of Architecture, Building & Civil Engineering, Loughborough University, LE11 3TU

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Appendix B: Main Study Materials

- Information Sheet
- Initial Consent Form
- Recruitment Interview Script
- Home Energy Survey Details
- Questionnaire 1
- Pre-Intervention Questionnaire
- Questionnaire 2
- Generic Feedback Example
- Property-Specific Feedback Example
- Final Letter Example
- Final Letter (Participants who withdrew early or moved) Example
- Season's Greetings – Gateway Reminder



Contact details

If you have any questions, please contact the team:

Email: godigital@lboro.ac.uk
Telephone: **01509 22xxxx**

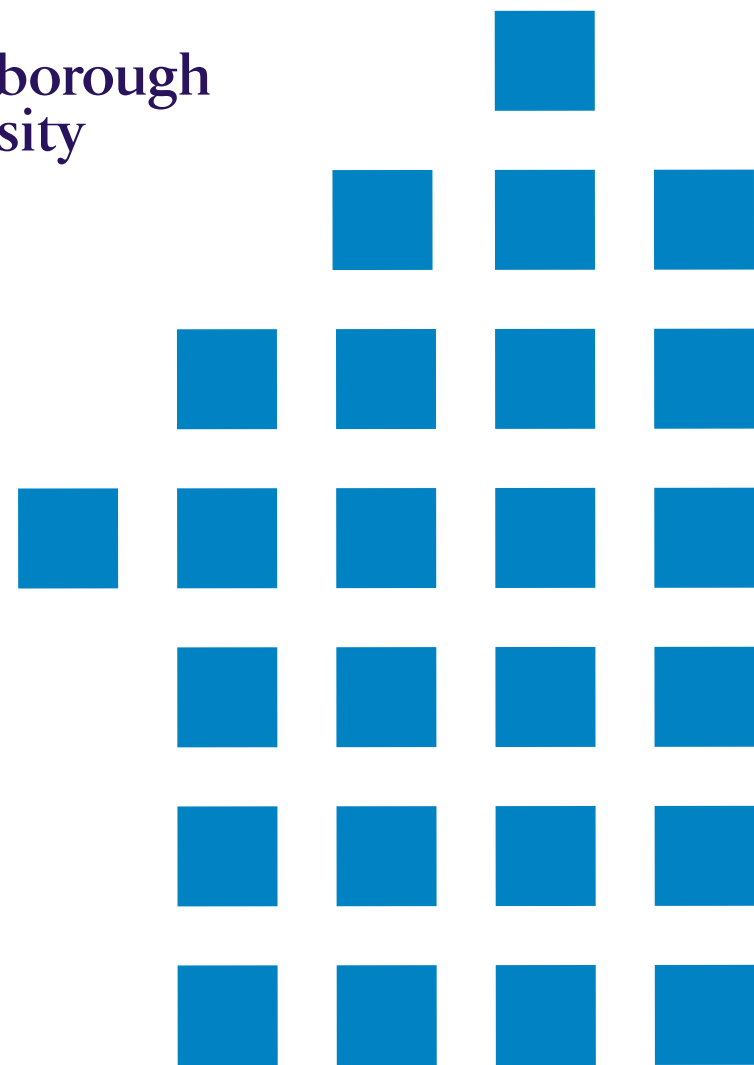
Please note: The team can only answer your queries relating to the Go Digital study.

For any queries relating to your heating system, please contact your supplier.

If you are not happy with how the research was conducted, please contact the Secretary for the University's Ethics Approvals (Human Participants) Sub-Committee:

Jacqueline Green, Research Office, Room 1.11, Hazlerigg Building, Loughborough University, Loughborough, LE11 3TU. Email: J.A.Green@lboro.ac.uk

The University also has a policy relating to Research Misconduct and Whistle Blowing which is available online at [www.lboro.ac.uk/admin/committees/ethical/Whistleblowing\(2\).htm](http://www.lboro.ac.uk/admin/committees/ethical/Whistleblowing(2).htm)



go digital

Information



What is the 'Go Digital' study?

'Go Digital' is a Loughborough University research project. We are investigating the way different households use their heating systems. This knowledge will help us design better heating controls that can help save people energy and money.

Please join the **Go Digital** study and help us with this valuable work.

What is in it for you?

Taking part in an academic research project can be interesting, as well as fun and informative. It is a chance for you to have your say and influence the future design of technology.

At the end of the study, we can provide you with personalised feedback. This will be based on the information we collect and may help you to reduce your energy bills.

You will also get to keep any new heating controls that you may be given as part of the study, at no charge.

We will give you a token of thanks for taking part in this study, in the form of high street vouchers totalling up to £60 (if you remain in the study for its duration). We will collect information about your energy use remotely, via your broadband connection. This means we won't keep disturbing you. The equipment will use no more than 500mb a month and less than £5 of electricity per year.

Who are the Go Digital team?

Our research team members are all employed by Loughborough University & working specifically on the Go Digital project. The Go Digital team can be contacted on: godigital@lboro.ac.uk or **01509 22xxxx**



Becky will be your main point of contact during the study and she is interested in all you have to say about your heating and your new controls.



Jackie will be analysing the data we get from your house, alongside all the other houses we are studying.



Ehab is particularly interested in the equipment and monitoring aspects of the project.

Partner organisations



Your equipment will be installed by a fully qualified professional from Mark Group. Mark Group is an international organisation, with around 3000 employees worldwide and is a leading installer of heating systems and renewable energy technologies such as solar hot water panels, heat pumps and solar electricity.



Your gas meter will be changed by Meter Assets who are an Ofgem-approved meter asset management company which owns, operates and manages gas meters on behalf of leading gas suppliers. All meters are smart-ready.



Your safety

University researchers work hard to ensure the safety and confidentiality of those that give their time and effort to advance knowledge through research and this project is no different.

- ✓ All members of our research team hold enhanced Disclosure & Barring Service (DBS) certificates (formerly Criminal Records Bureau (CRB) certificates)
- ✓ Participation in the study and all of its activities is voluntary and you can withdraw from the project at any time
- ✓ There are no risks to your personal safety from taking part in the study
- ✓ We will not disclose any identifiable information about you, your family or your energy use to anyone outside the project team
- ✓ We will not be able to access any of your private information, documents or emails via your internet connection
- ✓ Your information will not be used for marketing purposes by Loughborough University or any of the partner organisations

Further, detailed information relating to ethics has been included in the consent form as a separate sheet in your information pack.

Our monitoring equipment only records the temperature in your home, it can't tell when you are in or out of the house, nor does it have any imaging software. This screenshot shows the information we can see from each sensor, which just includes the room temperature and the sensor battery level.

Home		Refresh
	Basic Static Controller	
	Central Heating	
	Gateway	
	Hot Water	
	Multilevel Sensor 10	20.40
	Multilevel Sensor 11	21.10
	Multilevel Sensor 2	20.10
	Multilevel Sensor 3	18.90
	Multilevel Sensor 4	20.40
	Multilevel Sensor 6	19.40
	Multilevel Sensor 7	18.30
	Multilevel Sensor 8	18.70
	Multilevel Sensor 9	22.90
	Simple Motor	
	Thermostat	

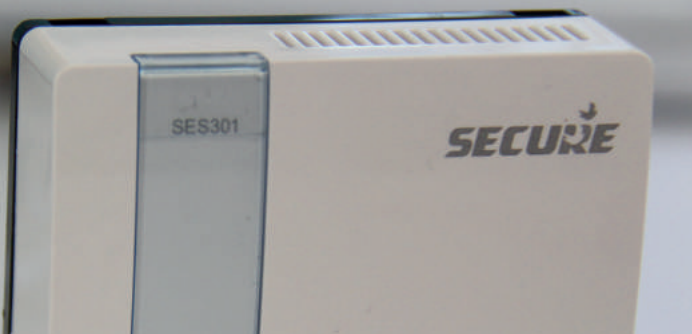
Home -> All Devices		Refresh
	Temperature Sensor	20.40 °C
	Battery Level	81 %

What would you have to do?

Timescales	Activity	£
Within the next 2 weeks	1) You will receive an email to confirm whether you have been chosen to take part in the study	
	2) You will be asked to complete a questionnaire either online or on paper (approx 15mins)	£5
Within the next month	3) Monitoring equipment will be installed into your home to measure your gas and electricity use (see page 3) (approx 1 hour)	£20
	4) Your gas meter will be changed (approx 1 hour)	£20
Within the next 3 months	5) Some houses will have new heating controls installed into your home (approx 1-2 hours) (We will inform you if you have been selected)	

All houses who sign up to the study will receive a £5 voucher initially. We will continue to monitor your heating use and be in touch occasionally until May 2017, when the study will end. All houses who complete the programme will receive a £10 bonus.

*** A small subsection of homes in the study will also be asked to take part in an interview (you will be asked for additional consent at the time and will be given an additional £30 in vouchers)**



Equipment

There will be 3 different groups of households (A, B & C) within our study and you will be randomly allocated to one of these groups. All 3 groups will have their energy use monitored, but only 2 of the groups will have their heating controls changed (B & C). [Please note: the equipment you receive may differ slightly from the images shown here]

Monitoring equipment [All houses]



Secondary gas meter

This will measure the amount of gas you use over the study period and will be attached to your new gas meter. It will not affect you, your gas supply or your gas bill.



Secondary electricity meter

This will measure the amount of electricity you use over the study period and a qualified electrician will install it for you. It will not affect you, your electricity supply or your electricity bill.



Temperature sensors x 10

These enable wireless monitoring of indoor temperature and we will place a sensor in every room of your house (the sensors are freestanding and will therefore be placed on shelves etc).



Gateway

This sends us your gas, electricity and temperature measurements over the internet. It needs to be connected to your broadband router.



Signal Strengthener

This boosts the signal between the heating controls and the boiler

If you are allocated to groups B & C, you will also have your heating controls changed with the equipment detailed below.

New heating controls [Groups B & C]



Programmable thermostat

This is the new heating controller that will be installed into your home. It will allow you to have better control of your heating and communicates via the gateway.



Temperature sensor x 1

One additional temperature sensor will replace your current thermostat and will communicate with the programmable thermostat above.



Boiler relay switch

This communicates between the programmable thermostat and your boiler to switch your heating on and off.

New heating controls [Group C only]



Programmable radiator valves

Programmable radiator valves will replace your current radiator valves and allow you to set the temperature in each room of your house.



go digital

Consent form: Part A

Please complete and give back

Please complete and give back

This form should be completed after the information booklet has been read. Reading and signing this form shows that you agree to take part in the Go Digital study and that you agree to all listed statements.

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethical Approvals (Human Participants) Sub-Committee.

I understand that I am under no obligation to take part in the study.

I understand that I have the right to withdraw from this study at any stage, without giving reason and without my legal rights being affected. I understand that, should I withdraw from the study, then any processed information collected to that point cannot be erased and that this information may still be used in project analysis.

I understand that all the information I provide will be treated in strict confidence and my identity will be kept anonymous and confidential.

Measurements

I agree to having the air temperature monitored in each room of my home.

I agree to have my gas meter changed.

I agree to my gas and electricity consumption being monitored.

I agree that my internet connection can be used to transfer data.

I agree to have my heating controls changed (if selected).

Data

I agree that all information collected during the study will be passed on to Loughborough University for use in the Go Digital study.

I understand that no personal information will be passed outside of the Go Digital project team (which includes others from Loughborough University, external collaborators and partner organisations).

I understand that my anonymised data will be stored and archived for further analysis by the Go Digital project team (which includes others from Loughborough University, external collaborators and partner organisations) but my home and its occupants will not be identifiable.

I understand that not all households in the study will have their heating controls changed.

I have read and understood the information sheet for the above project and this consent form. I have had the opportunity to ask questions about my participation.

I agree to participate in this study.

An adult (preferably the bill payer) should sign below on behalf of the whole household to confirm consent and involvement in the study.

Name:

Signature:

Postcode:

Date:

URN:

--	--	--	--	--



go digital

Consent form: Part B

For your records

Please keep this information for your records

Consent information for Adults

This form should be completed after the information booklet has been read. Reading and signing this form shows that you agree to take part in the Go Digital study and that you agree to all listed statements.

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethical Approvals (Human Participants) Sub-Committee.

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I understand that not all households in the study will have their heating controls changed.

I have read and understood the information sheet for the above project and this consent form. I have had the opportunity to ask questions about my participation.

I agree to participate in this study.

Interviewer no:

Interviewer name:

Date: /

Time interview started: :

Pre Recruitment Task

- Q1. **INTERVIEWER, PLEASE ENTER THE URN AND ADDRESS FOR THIS HOUSE FROM YOUR SAMPLE SHEET HERE BEFORE YOU START THE INTERVIEW. PLEASE ENSURE YOU ENTER THE DETAILS WITH INITIAL CAPS EG "21 Main Street" NOT "21 main street" OR "21 MAIN STREET"**

Address line 1

Address Line 2.....

Town/City.....

- Q1a **INTERVIEWER, PLEASE LOOK CAREFULLY AT THE HOUSE IN FRONT OF YOU. CAN YOU SEE SOLAR PANELS ON THE ROOF?**

Yes, I can see solar panels on the roof
No, I can't see solar panels on the roof
Unsure

CLOSE, DO NOT APPROACH

- Q1b **INTERVIEWER, PLEASE LOOK CAREFULLY AT THE HOUSE IN FRONT OF YOU AND RECORD THE KIND OF PROPERTY IT IS HERE. PLEASE REFER TO APPENDIX 1 OF YOUR BRIEFING NOTES FOR DESCRIPTIONS OF ELIGIBLE AND INELIGIBLE SEMI DETACHED PROPERTIES**

Detached/bungalow

CLOSE, DO NOT APPROACH

Mid terrace

CLOSE, DO NOT APPROACH

End terrace

CLOSE, DO NOT APPROACH

Looks like a semi but is at the end of a block of 3 or more properties

CLOSE, DO NOT APPROACH

Semi with an extension used as living space which touches a neighbouring property

CLOSE, DO NOT APPROACH

Semi with an extension used for living space which almost touches a neighbouring property. The space is too narrow for someone to walk down

CLOSE, DO NOT APPROACH

Semi detached house with no extension

IN SCOPE, APPROACH

Semi detached house with an extension that does not touch the neighbouring property and the gap is wide enough for some one to walk down

IN SCOPE, APPROACH

Recruitment

Q2. Good morning/afternoon/evening. My name is from Accent and I am carrying out research with Loughborough University into how households use and control their heating. Please can I speak to someone who uses the heating controls within your property? **INTERVIEWER: IF THE PERSON YOU ARE SPEAKING TO WANTS MORE INFORMATION ON THE RESEARCH AT THIS POINT PLEASE REFER TO SHOWCARD 1 AND 1A. SINGLE CODE**

Yes

No

Unsure

Prefer not to answer

PERSUADE AND REASSURE ELSE GO TO Q29

PROBE TO CLARIFY IF POSSIBLE ELSE GO TO Q29

PERSUADE AND REASSURE ELSE GO TO Q29

Q3. **INTERVIEWER: WHEN SPEAKING TO TARGET PERSON SAY:** Good morning/afternoon/evening. My name is from Accent. We are an independent market research company carrying out research with Loughborough University. The University is looking for households to help them in a research project. They want to find out how households use their heating so that they can help design better heating controls that can help save energy in the future. I am not speaking on behalf of energy companies and I am not here to try and persuade you to change your gas or electricity supplier.

This is a *bona fide* market research exercise. It is being conducted under the Market Research Society Code of Conduct which means that any answers you give will be treated in confidence. Can you spare minutes to run through a few questions to check that you are eligible to take part in this research? **INTERVIEWER: IF THE PARTICIPANT WANTS MORE INFORMATION ON THE RESEARCH AT THIS POINT PLEASE REFER TO SHOWCARD 1 AND 1A. SINGLE CODE**

Yes

No

Unsure

Prefer not to answer

PERSUADE AND REASSURE ELSE GO TO Q29

PROBE TO CLARIFY IF POSSIBLE ELSE GO TO Q29

PERSUADE AND REASSURE ELSE GO TO Q29

Q4. Thank you. You do not have to answer any questions you do not wish to and you can stop the interview at any time. Can I confirm the address of this property? Is it **INSERT ADDRESS DETAILS HERE FROM Q1? SINGLE CODE**

Yes

No

Unsure

Prefer not to answer

THANK AND CLOSE

PROBE TO CLARIFY IF POSSIBLE ELSE THANK AND CLOSE

PERSUADE AND REASSURE ELSE THANK AND CLOSE

Q5. Please can you give me your postcode?

Enter postcode here

Unsure

Prefer not to answer

Q6. What type of property do you live in? **INTERVIEWER: IF IN DOUBT, PLEASE REFER TO YOUR BRIEFING NOTES FOR DEFINITIONS OF ELIGIBLE PROPERTIES. SINGLE CODE**

Detached/Bungalow **THANK AND CLOSE**

Semi-detached

Terraced **THANK AND CLOSE**

Flat/apartment/other **THANK AND CLOSE**

Q7. Was your property built before or after November 2009?

Before November 2009
After November 2009
Unsure
Prefer not to answer

**PROBE TO CLARIFY IF POSSIBLE ELSE THANK AND CLOSE
PERSUADE AND REASSURE ELSE THANK AND CLOSE**

Q8. How many bedrooms does this house have? **SINGLE CODE**

Two or less
Three
Four or more
Prefer not to answer

**CHECK MIN (30) AND MAX (49) TARGETS AND CONTINUE IF POSSIBLE
CHECK MIN (273) AND MAX (310) TARGETS AND CONTINUE IF POSSIBLE
CHECK MIN (40) AND MAX (78) TARGETS AND CONTINUE IF POSSIBLE
PERSUADE AND REASSURE ELSE THANK AND CLOSE**

Q9. **ASK IF Q8 QUOTAS ARE OPEN ELSE THANK AND CLOSE** Do you (or another person in this household) own this property, either outright or with a mortgage? **SINGLE CODE**

Yes
No
Unsure
Prefer not to answer

**THANK AND CLOSE
PROBE TO CLARIFY IF POSSIBLE ELSE THANK AND CLOSE
PERSUADE AND REASSURE ELSE THANK AND CLOSE**

Q10. Do you have any current plans to move house within the next three years? **SINGLE CODE**

Yes
No
Unsure

THANK AND CLOSE

Q11. Do you have gas central heating in this property and is it in working order? **SINGLE CODE**

Yes
No
Unsure
Prefer not to answer

**THANK AND CLOSE
PROBE TO CLARIFY IF POSSIBLE ELSE THANK AND CLOSE
PERSUADE AND REASSURE ELSE THANK AND CLOSE**

Q12. Is there a tank for storing hot water?

Yes
No
Unsure
Prefer not to answer

Q13. Is your central heating boiler over or under 10 years old? **SINGLE CODE**

10 years old or under
Over 10 years old
Unsure
Prefer not to answer

**THANK AND CLOSE
PROBE TO CLARIFY IF POSSIBLE ELSE THANK AND CLOSE
PERSUADE AND REASSURE ELSE THANK AND CLOSE**

Q14. Do you have any solar panels installed in this property? **SINGLE CODE**

Yes
No
Unsure
Prefer not to answer

**THANK AND CLOSE
PROBE TO CLARIFY IF POSSIBLE ELSE THANK AND CLOSE
PERSUADE AND REASSURE ELSE THANK AND CLOSE**

Q15. Do you have a working broadband internet connection? **SINGLE CODE**

Yes
No
Unsure
Prefer not to answer

THANK AND CLOSE
PROBE TO CLARIFY IF POSSIBLE ELSE THANK AND CLOSE
PERSUADE AND REASSURE ELSE THANK AND CLOSE

Q16. Do you have any mechanical thermostatic radiator valves (TRVs) on your radiators? **INTERVIEWER PLEASE USE SHOW CARD 2; MINIMUM OF 50 TO HAVE TRVS; SINGLE CODE**

On all radiators
On most radiators
On some radiators
None
Unsure
Prefer not to answer

PROBE TO CLARIFY IF POSSIBLE
PERSUADE AND REASSURE

Q17. Thank you, you are in scope for the research. Now I will explain more about the research and why we have approached you. **INTERVIEWER: PLEASE GO THROUGH THE GO DIGITAL INFORMATION SHEET WITH THE PARTICIPANT. THEY MAY WISH YOU TO LEAVE IT WITH THEM TO READ, IN WHICH CASE YOU WILL NEED TO MAKE CONTACT AGAIN TO ASK THEM TO TAKE PART.**

Are you willing to take part in the trial? **SINGLE CODE**

Yes
No
Unsure
Prefer not to answer

PERSUADE AND REASSURE ELSE GO TO Q29
PROBE TO CLARIFY IF POSSIBLE ELSE GO TO Q29
PERSUADE AND REASSURE ELSE GO TO Q29

Q17a **INTERVIEWER: YOU NOW NEED TO GIVE THE PARTICIPANT THE CONSENT FORM TO SIGN. PLEASE ENTER THE FOLLOWING URN NUMBER ON THE CONSENT FORM IN THE SPACE PROVIDED**

DP: INSERT URN FROM Q1 HERE (DP please show in large red font)

INTERVIEWER CLICK HERE TO GO FORWARD

Q17b **INTERVIEWER PLEASE CONFIRM THAT YOU HAVE ENTERED THE URN NUMBER ON THE CONSENT FORM IN THE SPACE PROVIDED BEFORE GIVING IT TO THE PARTICIPANT TO SIGN**

Yes, I have entered URN number **INSERT URN FROM Q1 HERE (DP use red font for URN)** to the consent form

No, I have not entered URN number **INSERT URN FROM Q1 HERE (DP use red font for URN)** to the consent form
ONLY GO FORWARD IF YES IS TICKED

Q18. **INTERVIEWER PLEASE ASK THE PARTICIPANT TO READ AND SIGN THE CONSENT FORM AND PLEASE CONFIRM HERE THAT YOU HAVE OBTAINED THE SIGNED COPY**

Yes, the respondent has signed the consent form and I have taken it away with me
No, the respondent has not signed the consent form **ONLY GO FORWARD IF YES IS TICKED**

Q19. ASK IF Q17 = YES, ELSE THANK AND CLOSE. Thank you. I will need to take down your name and contact details. **INTERVIEWER PLEASE ENTER THE DETAILS WITH INITIAL CAPS EG “John Smith” NOT “john smith” OR “JOHN SMITH”**

Title: **PLEASE USE CHOICE FIELDS: Mr, Mrs, Ms, Dr.**

First name:

Surname:

Address: **PLEASE CARRY FORWARD FROM Q4**

Landline number:

Confirm landline number: **PLEASE DO NOT ALLOW TO GO FORWARD IF ‘CONFIRMED LANDLINE NUMBER’ DOES NOT MATCH ‘LANDLINE NUMBER’**

Mobile number:

Confirm mobile number: **PLEASE DO NOT ALLOW TO GO FORWARD IF ‘CONFIRMED MOBILE NUMBER’ DOES NOT MATCH ‘MOBILE NUMBER’**

Email address:

Confirm email address: **PLEASE DO NOT ALLOW TO GO FORWARD IF ‘CONFIRMED EMAIL ADDRESS’ DOES NOT MATCH ‘EMAIL ADDRESS’**

Q20. DELETE ALL TO SKIP

Q21. DELETE ALL TO SKIP

Q22. INTERVIEWER: PLEASE USE SHOWCARD 3, BUT PLEASE NOTE THAT THE LOCATION OF THE MPRN NUMBER ON THE BILL SHOWN IS JUST FOR REFERENCE. THEY MAY APPEAR IN DIFFERENT LOCATIONS ON DIFFERENT ENERGY COMPANY BILLS. In order for Loughborough University to set up and carry out the study, they will need your gas MPRN number. This is often referred to as an 'M' number and is the unique identifying number for your property (not your gas meter). It should be printed on your gas bill, usually on the first page. The gas MPRN will consist of six to ten numbers and no letters. Please can I have it? If you can't locate your MPRN, or you have just moved into your home and do not yet have a gas bill, you can call the Meter Number Helpline on **0870 608 1524** or we can get it for you by phoning this number if you give us your permission. We would only obtain your MPRN number for the purpose of the administration of this research. **SINGLE CODE**

Agreed to give MPRN number now

Agreed for field interviewer to dial the Meter Number Helpline now

GO TO Q22a

Can't give MPRN number now but agreed to obtain it and pass on later

Agreed for Accent to obtain MPRN number on their behalf

Refused

PERSUADE AND REASSURE ELSE GO TO Q29

Q22a INTERVIEWER: DID YOU GET THE MPRN NUMBER WHEN YOU PHONED THE HELPLINE?

Yes

No

Q22b SHOW IF Q22A = NO ELSE GO TO Q23. INTERVIEWER, PLEASE TELL THE PARTICIPANT THAT ACCENT WILL FIND THE MPRN NUMBER

Press forward to go to the next question

Q23. ASK IF Q22 = "AGREED TO GIVE MPRN NUMBER NOW" OR IF Q22A = YES. IF Q22 = CAN'T GIVE MPRN NUMBER NOW BUT AGREED TO OBTAIN IT LATER GO TO Q24 . IF q22A = NO GO TO Q25. INTERVIEWER PLEASE RECORD THE MPRN NUMBER HERE (ALLOW LETTERS AND NUMBERS)

MPRN number.....

Confirm MPRN Number

DO NOT LET THE INTERVIEW GO FORWARD UNTIL THE TWO NUMBERS AGREEE

Q24. **ASK IF Q22 = “CAN’T GIVE MPRN NUMBER NOW, BUT AGREED TO OBTAIN IT AND PASS IT ON LATER” ELSE GO TO Q25.** Please can you obtain the MPRN number either from your gas bill or by phoning the Meter Number Helpline on **0870 608 1524**. My colleagues will send you an email within the next two days which you can reply to with the MPRN number. If you don’t reply within two days they will ring you up to obtain it, so please could you write it down and have it to hand when they call. **SINGLE CODE**

INTERVIEWER PLEASE CONFIRM YOU HAVE READ OUT THIS STATEMENT TO THE PARTICIPANT

Yes

No **ONLY GO FORWARD IF YES IS TICKED**

Q25. **ASK IF Q22 NOT EQ “REFUSED” ELSE THANK AND CLOSE.** In order for Loughborough University to set up and carry out the study, they will also need your gas meter serial number. This is different from your MPRN number and it can be found on your gas meter. Can I have it please?

Agreed to give gas meter serial number now

Can’t give gas meter serial number now but agreed to obtain it and pass on later

Refused

PERSUADE AND REASSURE ELSE GO TO Q29

Q26. **ASK IF Q25 = “AGREED TO GIVE GAS METER SERIAL NUMBER NOW” ELSE GO TO Q27.**
INTERVIEWER PLEASE RECORD THE GAS METER SERIAL NUMBER HERE (ALLOW LETTERS AND NUMBERS)

Gas meter serial number

Confirm gas meter serial number.....

DO NOT LET THE INTERVIEW GO FORWARD UNTIL THE TWO NUMBERS AGREEE

Q27. **ASK IF Q25 = “CAN’T GIVE GAS METER SERIAL NUMBER NOW, BUT AGREED TO OBTAIN IT AND PASS IT ON LATER” ELSE GO TO Q28.** Please can you obtain your gas meter serial number from your gas meter. My colleagues will send you an email within the next two days which you can reply to with the serial number. If you don’t reply within two days they will ring you up to obtain it, so please could you write it down and have it to hand when they call.

INTERVIEWER PLEASE CONFIRM YOU HAVE READ OUT THIS STATEMENT TO THE PARTICIPANT

Yes

No **ONLY GO FORWARD IF YES IS TICKED**

Q28. **ASK IF Q25 NOT EQ "REFUSED" ELSE THANK AND CLOSE.** Loughborough University also need the name of the company that supplies gas to your property. Please can you tell me who that is? **SINGLE CODE**

British Gas
EDF Energy
EON
npower
SSE
Scottish Power
Other PLEASE **SPECIFY**

.....
Unsure
Prefer not to answer

Q29. **SHOW IF Q22 OR Q25 NOT EQ REFUSED:** We also need some demographic information to help us place participants in specific categories. **SHOW IF Q2 OR Q3 OR Q17 NOT EQ YES OR IF Q22 OR Q25 = REFUSED:** We'd like to gather some demographic information about people who do not want to help us with the research, so I have a few very short questions to ask you. **SHOW ALL:** Firstly, please can you tell me the job title of the chief wage earner of your household or, if you are the chief wage earner, your own job title?

IF SELF-EMPLOYED: ASK IF MANUAL/NON-MANUAL, SKILLED/QUALIFIED OR NOT, NUMBER OF EMPLOYEES – THEN LOOK UP SELF EMPLOYED TABLE

IF MANAGER/EXEC: ASK FOR INDUSTRY SECTOR, NUMBER OF EMPLOYEES IN COMPANY AND MANAGEMENT STATUS

IF RANK/GRADE (CIVIL SERVANT, NURSING, MILITARY, NAVY, POLICE ETC.) RECORD RANK/GRADE SPECIFICALLY

IF PENSIONERS: ASK IF STATE (GRADE "E") OR PRIVATE/OCCUPATIONAL PENSION (GRADE ON PREVIOUS OCCUPATION)

IF UNEMPLOYED: IF MORE THAN 6 MONTHS AGO (GRADE "E"), IF LESS THAN 6 MONTHS AGO (GRADE ON PREVIOUS OCCUPATION)

INTERVIEWER TYPE IN job tit:

Does the chief wage earner supervise any employees? Supervision involves overseeing the work of other employees on a day to day basis? **SINGLE CODE**

Yes
No
Unsure
Prefer not to answer

INTERVIEWER CODE SEG HERE

- | | |
|-------|---------------|
| 1. A | 4. C2 |
| 2. B | 5. DE |
| 3. C1 | 6. Not stated |

Q30. Which of the following age bands do you fall into? **INTERVIEWER PLEASE READ OUT**

16 to 24
25 to 34
35 to 44
45 to 54
55 to 64
65 to 74
75 and over
Refused

Q31. **INTERVIEWER PLEASE RECORD THE PARTICIPANT'S GENDER BUT DO NOT ASK**

Male
Female
Unsure

Q31a How would you describe your ethnic group? **INTERVIEWER PLEASE SHOW SHOWCARD 4 SINGLE CODE**

White

English / Welsh / Scottish / Northern Irish / British
Irish
Gypsy or Irish Traveller
Any other white background (please specify)

.....

Mixed / Multiple Ethnic Groups

White and Black Caribbean
White and Black African
White and Asian
Any other mixed/multiple background (please specify)

.....

Asian / Asian British

Indian
Pakistani
Bangladeshi
Chinese
Any other Asian background (please specify)

.....

Black / African /Caribbean / Black British

African
Caribbean
Any other Black / African /Caribbean background (please specify)

.....

Other Ethnic Group

Arab
Any other ethnic group (please specify)

.....

Unsure
Prefer not to answer

SHOW ONLY IF Q18 = YES INTERVIEWER HAND OVER THE £5 GIFT VOUCHER AND GET THE PARTICIPANT TO SIGN THE INCENTIVE RECEIPT FORM

SHOW ALL: THANK YOU FOR YOUR HELP IN THIS RESEARCH

This research was conducted under the terms of the MRS code of conduct and is completely confidential. If you would like to confirm my credentials or those of Accent please call the MRS free on 0500 396999.
HAND OVER THE THANK YOU SLIP.

Thank you

I confirm that this interview was conducted under the terms of the MRS code of conduct and is completely confidential

Interviewer's signature:

Time Interview completed:

--	--

--	--

Refusals

Q32. **ASK IF Q2 OR Q3 NOT EQ YES OR IF Q17 = NO OR IF Q22 OR Q25 = REFUSED** What reason did the person give for refusing to answer your question?

.....

.....

.....

.....

.....

Email Chase Up

Q33. **DP TO SEND THIS EMAIL IF Q22 = CAN'T GIVE MPRN NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER OR IF Q25 = CAN'T GIVE GAS METER SERIAL NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER.**

DP SEND TO CONFIRMED EMAIL ADDRESS OBTAINED AT Q19 ASAP AFTER THE INTERVIEW SHAS BEEN UPLOADED

Dear INSERT TITLE AND SURNAME OBTAINED AT Q19

LOUGHBOROUGH UNIVERSITY'S GO DIGITAL STUDY

You very kindly agreed to take part in this project recently when our interviewer called at your home.

At that time the interviewer asked you for your

SHOW IF Q22 = CAN'T GIVE MPRN NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER AND IF Q25 = CAN'T GIVE GAS METER SERIAL NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER "MPRN number and gas meter serial number but you did not have them to hand".

SHOW IF Q22 = CAN'T GIVE MPRN NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER "MPRN number but you did not have it to hand".

SHOW IF Q25 = CAN'T GIVE GAS METER SERIAL NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER "gas meter serial number but you did not have it to hand".

SHOW ALL This email gives you the opportunity to give us this information. All you need do is click on the secure link below and follow the instructions. It should take only a few minutes of your time.

Any information you give will be treated in strictest confidence in accordance with the Market Research Society's Code of conduct

Please click on this link:

Once again, on behalf of Loughborough University, I would like to thank you for agreeing to participate in this research.

Yours sincerely

Seán Brennan
Project Manager

Online Form

Q34. This form enables you to give us your **SHOW IF Q22 = CAN'T GIVE MPRN NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER AND IF Q25 = CAN'T GIVE GAS METER SERIAL NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER** "MPRN number and gas meter serial number".

SHOW IF Q22 = CAN'T GIVE MPRN NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER "MPRN number".

SHOW IF Q25 = CAN'T GIVE GAS METER SERIAL NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER "gas meter serial number".

SHOW IF Q22 = CAN'T GIVE MPRN NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER
Please enter your MPRN number in the first box below and then confirm it by retyping it in the second box.. You will find your MPRN number either from your gas bill or by phoning the Meter Number Helpline on **0870 608 1524**. Alternatively you can give Accent permission to phone the helpline on your behalf. We would only obtain your MPRN number for the purpose of the administration of this research

I give Accent permission to obtain my MPRN number on my behalf

MPRN number.....

Confirm MPRN Number

DP DO NOT LET THE INTERVIEW GO FORWARD UNTIL THE TWO NUMBERS AGREE

SHOW IF Q25 = CAN'T GIVE GAS METER SERIAL NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER Please enter your gas meter serial number in the first box below and then confirm it by retyping it in the second box. You will find your gas meter serial number on your gas meter.

Gas meter serial number

Confirm Gas Meter Serial Number.....

DP DO NOT LET THE INTERVIEW GO FORWARD UNTIL THE TWO NUMBERS AGREE

Thank you for providing this information. This research was conducted under the terms of the Market Research Society's code of conduct and is completely confidential. If you would like to confirm Accent's credentials please call the Market Research Society free on 0500 396999.

Telephone Chase Up

Q35. ETU PLEASE MAKE THIS CALL IF Q22 = CAN'T GIVE MPRN NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER OR IF Q25 = CAN'T GIVE GAS METER SERIAL NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER AND IF THE RESPONDENT HAS NOT COMPLETED THE ONLINE REMINDER FORM WITHIN 2 DAYS OF IT BEING SENT.

Good morning/afternoon/evening. My name is from Accent and I am carrying out research with Loughborough University into how households heat their homes. Please can I speak to **INSERT TITLE AND SURNAME OBTAINED AT Q19.**

WHEN SPEAKING WITH THE CORRECT RESPONDENT PLEASE CONTINUE WITH:

You very kindly agreed to take part in this project recently when our interviewer called at your home. At that time the interviewer asked you for your

SHOW IF Q22 = CAN'T GIVE MPRN NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER AND IF Q25 = CAN'T GIVE GAS METER SERIAL NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER "MPRN number and gas meter serial number but you did not have them to hand".

SHOW IF Q22 = CAN'T GIVE MPRN NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER "MPRN number but you did not have it to hand".

SHOW IF Q25 = CAN'T GIVE GAS METER SERIAL NUMBER NOW BUT AGREED TO OBTAIN IT AND PASS ON LATER "gas meter serial number but you did not have it to hand".

SHOW ALL I am phoning today to give you the opportunity to give us this information. All you need do is tell me the numbers and I will record them. It will take only a few minutes of your time.

Any information you give will be treated in strictest confidence in accordance with the Market Research Society's Code of conduct

INTERVIEWER ACCESSES INCOMPLETE ONLINE FORM SHOW Q34 ABOVE TO COMPLETE THE MISSING DATA

Accent obtains MPRN Number from the Meter Number Helpline

Q36. ASK IF Q22 OR Q34 = "AGREED FOR ACCENT TO OBTAIN MPRN NUMBER" ELSE END. INTERVIEWER: THE PARTICIPANT HAS AGREED THAT ACCENT CAN PHONE THE AUTOMATED METER NUMBER HELPLINE TO OBTAIN THE MPRN NUMBER. PLEASE DIAL 0870 608 1524 AND USE THE POSTCODE AND ADDRESS INFORMATION GIVEN BELOW TO OBTAIN THAT NUMBER

SHOW POSTCODE FROM Q5 HERE

SHOW ADDRESS FROM Q4 HERE

INTERVIEWER: ENTER MPRN NUMBER IN THE ONLINE RESPONSE FORM Q34

MPRN number.....

Confirm MPRN Number

DP DO NOT LET THE INTERVIEW GO FORWARD UNTIL THE TWO NUMBERS AGREE

Go Digital Study

Supplementary detail required in addition to standard EPC

- Floorplan which contains:
 - Each room clearly named
 - Dimensions of each room
 - Radiator locations, stating **with** or **without** TRV
 - Show if the stairs lead directly from a downstairs room to upstairs (indicate if no separate hallway)
 - North direction indicated
- Photo of the front of the house
- Make and model of boiler and heating controls:
 - Clear photo of boiler model plate
 - Clear photo of programmer (whether boiler mounted or separate)
 - Clear photo of thermostat (noting location – e.g. hallway or living room)
- Complete list of secondary heating devices including location
- Location of any extractor fans, including cooker hoods, bathrooms, toilets etc.



Go Digital Questionnaire 1

1. Welcome

Thank you for your ongoing involvement in the Go Digital study.

We would like to collect a few details about your household and therefore it would be really helpful if you could fill in the following questionnaire, which shouldn't take you more than 10 minutes.

Once you have completed the questionnaire and the technical survey has been carried out in your home, you will receive a £30 voucher as a thank you for your time.

Note: Please be aware that you cannot save your responses, therefore you will need to complete the questionnaire in one go.

2. Your details

* 1. Please enter your name, the first line of your address and your postcode so that we can match your responses to your property details

Name

First Line of Address

Postcode

Email address

3. Introduction

2. How long have you lived in your home? (x years x months)

3. Which of the following appliances do you have AND use in your home? (select all that apply)

- ☐ Tumble dryer
- ☐ Washing machine
- ☐ Combined washer dryer
- ☐ Gas oven
- ☐ Gas hob
- ☐ Electric oven
- ☐ Electric hob
- ☐ Dishwasher
- ☐ Microwave
- ☐ Secondary heaters (e.g. fan heater, electric radiators, gas fire)
- ☐ Open fire/log burner
- ☐ Immersion heater (in your hot water tank)
- ☐ Electric shower (i.e. water heated by the shower, not the boiler/hot water tank)

4. How confident are you in the use of the following technology:

	Very confident	Reasonably confident	Neither confident nor unconfident	Not very confident	Not at all confident
Standard mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smart phones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heating controls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Computers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Which of the following best describes your primary mobile phone:

- ☐ iPhone
- ☐ Blackberry
- ☐ Android
- ☐ Windows
- ☐ Other smartphone
- ☐ Other non-smartphone
- ☐ I don't have a mobile phone
- ☐ I'm not sure

6. How often in a typical day, if at all, do you use different applications on your mobile phone?
(including: playing games, using social networking sites, looking at videos, checking emails etc.)

- ☐ Frequently
- ☐ Several times a day
- ☐ A few times a day
- ☐ Once a day
- ☐ Less than once a day
- ☐ Never

7. How many rooms does your home have?

Note: Please DO count ALL rooms, for example: kitchens, living rooms, utility rooms, bedrooms, studies, conservatories. Please DO NOT count: bathrooms, toilets, halls, landings or rooms that can only be used for storage such as cupboards

4. Your heating

8. Please select which of the following you use to heat your home? (please select all that apply)

	Use Often	Use Occasionally	Have but don't use	Don't have
Central heating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gas fire (mains gas)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gas fire (bottled gas)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electric heater (including electric towel rails and oil filled radiators)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Open fire burning coal/wood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enclosed fire or stove burning coal/wood/smokeless fuel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aga or Rayburn stove (any fuel)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other radiator connected to hot water system (not the central heating system)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Are there any special factors you consider when heating your home? e.g. young children, pets, elderly relatives?

- ☐ No
- ☐ Yes (please explain)

10. Are there any rooms in your home which you don't usually heat?

- ☐ No
- ☐ Yes (please list)

11. How do you primarily control your central heating?

	This is the main way I control the heating	I often use this method	I sometimes use this method	I don't ever do this
Manually turn the boiler on & off	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using a timer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using the radiator valves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adjusting the thermostat on/off or up/down	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. Do you ever adjust your radiator valves?

- ☐ Yes in all rooms
- ☐ Yes in some rooms
- ☐ No

Please explain when and why/ why not?

13. How easy do you find your current central heating controls are to use?

Very easy	Easy	Reasonably easy	Neither easy for difficult	Reasonably difficult	Difficult	Very difficult
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please try and explain why

14. How easy do you find your current central heating controls are to access?

Very easy	Easy	Reasonably easy	Neither easy for difficult	Reasonably difficult	Difficult	Very difficult
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please try and explain why

15. Currently, who in your household operates the central heating controls?

- ☐ Everyone in the household
- ☐ Any of the adults in the household
- ☐ No-one (we don't ever change or adjust the heating controls)
- ☐ Specific individual (please specify and comment)

16. If you could change anything about your central heating controls, what would it be?

The following questions relate to secondary heating.

Secondary heating is any form of alternative or supplementary heating to the central heating system, which may be fixed or portable.

17. In general, how do you use your secondary heating?
(please select all that apply)

- ☐ To provide extra heat when the heating system is on
- ☐ To provide heat when the heating system is not on
- ☐ To provide heat to rooms where there is no heating
- ☐ I have secondary heating, but I don't use it
- ☐ I don't have secondary heating

Other (please specify)

18. How many rooms in your house have secondary heating? (fixed or portable)

- ☐ None
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 or more
- ☐ All

5. Winter heating

19. Do you heat any of the following in winter?

	Yes - using the central heating	Yes - heated by other means	No	Don't have
Conservatory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Garage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outbuilding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outdoor hot tub/pool	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. During a typical winter, can you normally keep comfortably warm in your living room?

- ☐ Yes
- ☐ No
- ☐ Sometimes

Please try and explain why

21. In winter, do you leave windows or external doors open at any time during the DAY?

- ☐ Always
- ☐ Often
- ☐ Occasionally
- ☐ Never

Please try and explain which rooms and why...

22. In winter, do you leave windows or external doors open at any time during the NIGHT?

- ☐ Always
- ☐ Often
- ☐ Occasionally
- ☐ Never

Please try and explain which rooms and why...

23. In winter, do you generally open or close internal doors? (i.e. doors that close off rooms within the building)

	Generally open	Generally closed	It varies	I'm not sure
Day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Night	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please try and explain why...

6. Summer heating

24. During a typical **summer**, do you find any of these rooms get uncomfortably warm? (please tick all that apply)

- ☐ Main living room
- ☐ Main bedroom
- ☐ Other bedrooms
- ☐ None of the above
- ☐ Other rooms [please specify]

25. Did you heat any parts of your house at all over the summer months this year (June - September)?

- ☐ Yes - central heating
- ☐ Yes - secondary heating
- ☐ No

26. How often did you use heating over the summer months this year (June - September)?

- ☐ I did not use heating over the summer months
- ☐ Occasionally
- ☐ Once a week
- ☐ A few times a week
- ☐ Once a day
- ☐ Twice a day
- ☐ More than twice a day

27. What was the reason for needing to heat your house over the summer?

7. Your household

28. Which of the following best describes your household?

- ☐ Single person household
- ☐ Couple
- ☐ Retired couple
- ☐ Family
- ☐ Joint owners, some unrelated
- ☐ Household with lodger(s)
- ☐ Owner and tenants (with some unrelated)

Other (please specify)

29. How many people currently live in your household?

30. Please tell us some basic information about the people in your household

	Age	Gender	Employment/Education
Person 1 (you)	<input type="text"/>	<input type="text"/>	<input type="text"/>
Person 2	<input type="text"/>	<input type="text"/>	<input type="text"/>
Person 3	<input type="text"/>	<input type="text"/>	<input type="text"/>
Person 4	<input type="text"/>	<input type="text"/>	<input type="text"/>
Person 5	<input type="text"/>	<input type="text"/>	<input type="text"/>
Person 6	<input type="text"/>	<input type="text"/>	<input type="text"/>
Person 7	<input type="text"/>	<input type="text"/>	<input type="text"/>
Person 8	<input type="text"/>	<input type="text"/>	<input type="text"/>

Please give the first name of the person filling in the form (you)

31. What is your estimated annual household income?

- ☐ Less than £15,000
- ☐ £15,000 - £19,999
- ☐ £20,000 - £29,999
- ☐ £30,000 - £39,999
- ☐ £40,000 - £49,999
- ☐ £50,000 - £59,999
- ☐ £60,000 - £69,999
- ☐ £70,000 - £99,999
- ☐ £100,000 - £149,999
- ☐ More than £150,000
- ☐ I would rather not say

32. In general, during the winter months, when is there someone regularly in your home? (Please tick all that apply)

- ☐ All of the time
- ☐ All day
- ☐ Weekday morning
- ☐ Weekday lunchtime
- ☐ Weekday afternoon
- ☐ Weekday evenings
- ☐ Weekend daytime
- ☐ Weekend evenings
- ☐ Throughout the night
- ☐ Highly variable
- ☐ Don't know

33. Please indicate the following approximate times for your household?

Weekday

Weekend

What time does the first
person tend to get up?

What time does the last
person tend to go to
bed?

Other (please specify)

8. Changes to your home

We know that the home is an ever-changing environment, therefore, we just wanted to check which changes might have happened since the study started in early 2015

34. Has anyone moved in/out of your home since you signed up for the study?

☐ Yes

☐ No

If YES, please state whether they moved in or out AND the approximate date

35. Have you made any of the following home improvements since you signed up for the study?

☐ New windows

☐ New external doors

☐ Draught proofing

☐ Loft insulation

☐ Wall insulation

☐ Extension

☐ No changes have been made

☐ Other (please specify)

9.

36. Please feel free to provide us with any additional information which you feel is relevant to the study

10. Thank you

Thank you again for your time.

Once **both** this questionnaire and the technical survey has been carried out in your home, we will send you a £30 voucher. If you have any comments, questions, or concerns, please contact the Go Digital team on godigital@lboro.ac.uk.

Please note: The information you provide in this study will be held securely by Loughborough University; no one will be identifiable in the results and your personal details will not be passed to other people or organisations outside the project team. The research is being carried out in accordance with the Data Protection Act and Loughborough University's ethical procedures.



Go Digital Pre-control installation Questionnaire

Prior to the installation of your new heating controls we would like to get some more information regarding the use of your existing controls and your expectations of the new controls. This should take 10-15 minutes to complete. Once complete you can return it to the heating engineer in the envelope provided.

Name:

Address:

General update questions

1. Has there been any changes in the household composition over the last year (e.g. people moving in or out)?

a. Yes ☐

b. No ☐

If Yes, please include details below:

2. Have you had any changes to your heating system over the last year?

a. Yes ☐

b. No ☐

If Yes, please detail below:

Questions regarding your existing heating controls

3. Were the existing heating controls in your home when you moved in?

a. Yes ☐

b. No ☐

If No, when did you change them and why?

4. How did you learn to use the existing controls? Please tick all that apply

a. An installer set them up for me ☐

b. I read the user manual ☐

c. Trial and error ☐

d. I had very similar controls before ☐

e. Other

5. Can you select the relevant statement(s) for how you currently heat your home (before the new controls are installed). Please tick all that apply

a. I regularly adjust radiator valves/TRVs to suit my use of individual rooms ☐

b. I manually switch the heating on and off as needed ☐

c. I prefer to use my heating manually over using the timer ☐

d. I do not have a timer ☐

e. I have set a timer and leave it to do the rest ☐

f. I adjust my thermostat, up/down/on/off, as and when I need to ☐

g. I have it set on a timer but will adjust the thermostat if needed ☐

h. I regularly use secondary heating sources (gas fires, portable radiators etc.) to boost my heating use ☐

i. I use various methods to control my heating ☐

6. What settings do you have your current heating controls set to?

	Heating period 1	Heating period 2	Heating period 3	Heating period 4
Temperature set (°C)				
Start time (am/pm)				
End time (am/pm)				

I have no settings programmed on my heating controls ☐

7. Do you have different setting for weekdays and weekends?

a. Yes ☐

b. No ☐

Please explain what they are and why:

8. Do you adjust radiator valves in your home?

a. Yes ☐

b. No ☐

If No, why not:

- Too stiff ☐
- Choose not to ☐
- They are currently set how I want them already ☐
- I am unsure of the numbers, settings on them ☐
- Other ☐

9. Are there any functions on your existing controls which you do not use?

a. Yes ☐

b. No ☐

If Yes, please say what the functions are and why you do not use them:

10. Are there any settings/functions on your existing controls you do not understand or are unclear?

a. Yes ☐

b. No ☐

Please explain further:

11. Select all statements regarding what you currently like about your existing controls

- a. Easy to use ☐
- b. Buttons/dials clear to understand ☐
- c. Easy to set up heating schedules ☐
- d. Gives options of different schedules for different days ☐
- e. Responds quickly when any changes are made to controls ☐
- f. They look good ☐
- g. They are easy to access ☐

12. Select any statement of relevance about your existing controls:

- a. It is unclear on the controls when the heating is on or off ☐
- b. Setting heating schedules is overly complicated ☐
- c. Language used is on them is confusing/unclear ☐
- d. Need to program weekdays and weekends separately ☐
- e. I am unsure as to what advance/boost/override actually does to the system ☐
- f. Buttons and text are not legible ☐
- g. Difficult to access to change settings ☐
- h. They use confusing symbols and abbreviations ☐
- i. They do not meet my heating needs ☐

13. Are there any specific factors you consider when heating your home?

- a. Yes ☐
- b. No ☐

Please explain:

14. Do you heat any rooms in your home differently to others?

- a. Yes ☐
- b. No ☐

If Yes, can you explain why?

15. Who in the household currently interacts with your existing heating controls/system

- a. Just myself ☐
- b. Everybody ☐
- c. All adults within the household ☐
- d. Someone else ☐

Expectations of the new heating controls

16. Were you considering having new heating controls installed prior to being part of the

Go Digital study?

a. Yes ☐

b. No ☐

17. Do you think you will make any changes to your current heating settings

(time/temperatures)?

a. Yes ☐

b. No ☐

If Yes, what do you think you will change?

18. What features of the new controls do you think you will use?

a. Individual room heating schedule settings ☐

b. App ☐

c. Quick action settings ☐

d. Economy setting (reduces all rooms by 3°C) ☐

e. Away setting (sets all zones to 15°C) ☐

f. Heating off override ☐

g. Day off setting (uses a different days schedule) ☐

19. The controls allow you to set temperatures from 5°C up to 35°C, what temperature(s) do you think you will set on the controls?

20. Do you think you will use the app for controlling your heating

a. All the time ☐

b. Occasionally ☐

c. Rarely ☐

d. Never ☐



21. Do you think who interacts with the heating within your home will change with the new controls?

- a. Yes ☐
- b. No ☐

If Yes, how do you think it will change?

22. Do you think the new controls will increase how often you make changes to your heating settings?

- a. Yes ☐
- b. No ☐
- c. Unsure ☐

23. Which of the following do you expect once your new heating controls are installed?

Please select all that apply

- a. Improved comfort ☐
- b. Increased use of heating controls ☐
- c. Energy savings ☐
- d. More control of the spaces in your home ☐
- e. Quicker response to changes made to heating settings ☐
- f. Anything else? Please explain:

Thank you again for your time.

Please put this completed questionnaire in the envelope provided and then pass it on to the heating engineer from [xxxxx]. If you have any comments, questions, or concerns, please contact the Go Digital team on godigital@lboro.ac.uk.



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Go Digital Questionnaire 2.

Page 1: Welcome

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Page 2: About You

1. Please confirm your first name

2. Approximately what year did you move into your house?

3. Which of the following statements best describes you?

- ☐ I like to be one of the first people to have a new tech gadget
- ☐ I'm not always the first to get a new gadget, but I tend to buy it before most others
- ☐ I prefer for other people to try out a new technology gadget before I get it for myself
- ☐ I prefer to wait until the price drops before I get a new technology gadget
- ☐ I'm usually one of the last people I know to get a new tech gadget

Page 3: Your Heating

4. How do you normally control your heating?

Please don't select more than 1 answer(s) per row.

Please select exactly 6 answer(s).

	I don't ever do this	I sometimes use this method	I often use this method	This is the main way I control the heating
Switching the boiler on and off	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using a timer to control when heating comes on and goes off	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adjusting the radiator valves in each room	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adjusting the thermostat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using a smart heating controller (e.g. Honeywell Evohome, Hive, Nest)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using a smart phone application	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. In your house, how many people (including yourself) regularly make changes to the heating schedule (on/off times, temperatures)?

- ☐ Nobody makes regular changes
- ☐ One person makes regular changes
- ☐ Two people make regular changes
- ☐ Three people make regular changes
- ☐ Four people make regular changes
- ☐ Five people make regular changes
- ☐ More than five people make regular changes

6. How easy are your heating controls to use?

- ☐ Very easy
- ☐ Easy
- ☐ Reasonably easy
- ☐ Neither easy nor difficult
- ☐ Reasonably difficult
- ☐ Difficult
- ☐ Very difficult

6.a. If you find your heating controls difficult to use, please explain the reasons why.

7. How easy are your heating controls to access (are they in easily accessible places)?

- ☐ Very easy
- ☐ Easy
- ☐ Reasonably easy
- ☐ Neither easy nor difficult
- ☐ Reasonably difficult
- ☐ Difficult
- ☐ Very difficult

7.a. If you find your heating controls difficult to access, please explain the reasons why.

Optional

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Page 4: Summer Heating

8. Did you use any of these methods to heat any parts of your house at all over the summer months this year (June – August 2018 inclusive)? Please tick all that apply.

- ☐ Central heating (e.g. main gas boiler and radiators)
- ☐ Secondary heating (gas)
- ☐ Secondary heating (electric)
- ☐ Solid fuel heater (e.g. coal or wood burner)
- ☐ None of these methods

9. In your house this summer (between June - August 2018), how did you typically feel?

- ☐ Much too warm
- ☐ Too warm
- ☐ Comfortably warm
- ☐ Comfortable
- ☐ Comfortably cool
- ☐ Too cool
- ☐ Much too cool

Page 5: Winter Heating

10. Did you use any of these methods to heat any parts of your house last winter (between December 2017 - February 2018)? Please tick all that apply.

- ☐ Central heating (e.g. main gas boiler and radiators)
- ☐ Secondary heating (gas)
- ☐ Secondary heating (electric)
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- ☐ None of these methods

11. In your house last winter (between December 2017 - February 2018), how did you typically feel?

- ☐ Much too warm
- ☐ Too warm
- ☐ Comfortably warm
- ☐ Comfortable
- ☐ Comfortably cool
- ☐ Too cool
- ☐ Much too cool

12. After your Honeywell controls were installed, how did your house feel last winter (between December 2017 and February 2018)?

- ☐ About the same
- ☐ Cooler
- ☐ Warmer

12.a. If your house felt warmer or cooler, please tell us why.

13. In your house, how many people (including you) regularly use the Honeywell Evohome app on their smart phone, tablet or computer?

- ☐ Nobody uses the Honeywell Evohome app
- ☐ One person regularly uses the Honeywell Evohome app
- ☐ Two people regularly use the Honeywell Evohome app
- ☐ Three people regularly use the Honeywell Evohome app
- ☐ Four people regularly use the Honeywell Evohome app
- ☐ Five people regularly use the Honeywell Evohome app
- ☐ More than five people regularly use the Honeywell Evohome app

Page 6: Changes to your home

14. Have there been any of these **changes to the size of your house** since the Go Digital study started in 2015? (please tick all that apply)

- ☐ Loft conversion
- ☐ Extension
- ☐ New conservatory
- ☐ Added habitable external room (e.g. garden lodge)

14.a. Please tell us when (approximately) you made the changes to the size of your house:

15. Have there been any of these **changes to the insulation of your house** since the Go Digital study started in 2015? (please tick all that apply)

- ☐ New external doors
- ☐ New double-glazed windows
- ☐ New loft insulation
- ☐ New cavity wall insulation
- ☐ New solid wall insulation
- ☐ New floor insulation
- ☐ Other new insulation (e.g. conservatory roof insulation)

15.a. Please tell us when (approximately) you made the changes to the insulation of your house:

16. Have there been any **changes to the way you heat your house** since the Go Digital study started in 2015? (please tick all that apply)

- ☐ New boiler
- ☐ New secondary heater
- ☐ New Smart heating controls (e.g. Hive, Nest, Honeywell)
- ☐ New TRVs (thermostatic radiator valves)
- ☐ New smart TRVs (thermostatic radiator valves which can be programmed to come on at different times and temperatures)
- ☐ New under-floor heating

16.a. Please tell us when (approximately) you made the changes to the way you heat your house:

17. Have there been **any other changes to your house** since the Go Digital study started in 2015? (please tick all that apply)

- ☐ In-home energy display (lets you see how much electricity and/or gas you are using)
- ☐ Installed PV solar panels (electricity)
- ☐ Installed thermal solar panels (water heating)
- ☐ Energy storage (e.g. batteries in garage)
- ☐ Electric vehicle

17.a. Please tell us when (approximately) you made any other changes to your house:

Page 7: Changes to your household

18. Since the Go Digital study started in 2015, have there been any changes to your household income?

- ☐ Household income has stayed approximately the same
- ☐ Household income has increased
- ☐ Household income has decreased

19. Since the Go Digital study started in 2015, have there been changes in the amount of time your household spends at home?

- ☐ About the same amount of time is spent at home
- ☐ More time is spent at home
- ☐ Less time is spent at home

20. Since the Go Digital study started in 2015, have there been changes to the number of people in your household?

- ☐ Household number has stayed the same
- ☐ Household number has increased
- ☐ Household number has decreased

Page 8: Thank You

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Go Digital Questionnaire 2

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- ☐ Comfortably cool
- ☐ Too cool
- ☐ Much too cool

12. Since the Go Digital study started in 2015, do you feel the temperature in your house is generally:

- ☐ About the same
- ☐ Cooler
- ☐ Warmer

12.a. If your house feels warmer or cooler, please tell us why.

Page 6: Changes to your home

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GO DIGITAL

Thank you for participating in the Go Digital
Home Energy Project

We have compiled information about the Go Digital
homes, we hope you will find it interesting

About our study

The main aim of the Go Digital study was to understand how energy is used in UK homes. The work was undertaken by researchers at Loughborough University with funding from the UK Engineering and Physical Sciences Research Council. The work started in November 2012 and continued until October 2018. The Go Digital study has been the longest running and biggest survey of energy use in UK homes, and has produced some unique findings.

We included 393 semi-detached homes in our study. All of these were in the Midlands (see the map below) and all were owner occupied properties with gas central heating. To date, we have analysed the energy measurements made in 114 homes between September 2015 and August 2016.

This leaflet tells you what we have learned so far about the energy efficiency of the Go Digital homes. We also provide you with information about the greenhouse gas emissions from these homes and the energy costs.

We hope you find this information interesting.

Thank you for helping us; without households like yours, our study would not have been possible.



The energy efficiency of houses

The energy performance certificate

The information from the home energy surveys was used to calculate how much gas would be used for heating and hot water if all the rooms in the home were heated in a standard way - for nine hours each week day and all day at the weekends^{1*}. The calculations produce an Energy Efficiency Rating. This is the rating shown on the Energy Performance Certificate which is needed when people buy or sell a house.

Households may use more or less energy than stated on an EPC depending on how they actually use their heating system. For example, most people do not heat their house in the standard way.

Comparing the energy efficiency of houses

The average Energy Efficiency Rating of all English owner-occupied homes^{2*} was 60.5, Band D. The average rating of the Go Digital homes was 64, also Band D.

Only 1% of English owner-occupied homes are in Band A or B, but 5% are in Bands F or G. The remainder are in Bands C, D and E.

The Energy Efficiency Ratings of the Go Digital houses analysed so far are compared in the chart below. The most efficient house had a rating of 91, Band B, shown on the left of the chart; the least efficient house was rated 44, which is Band E, shown on the right.

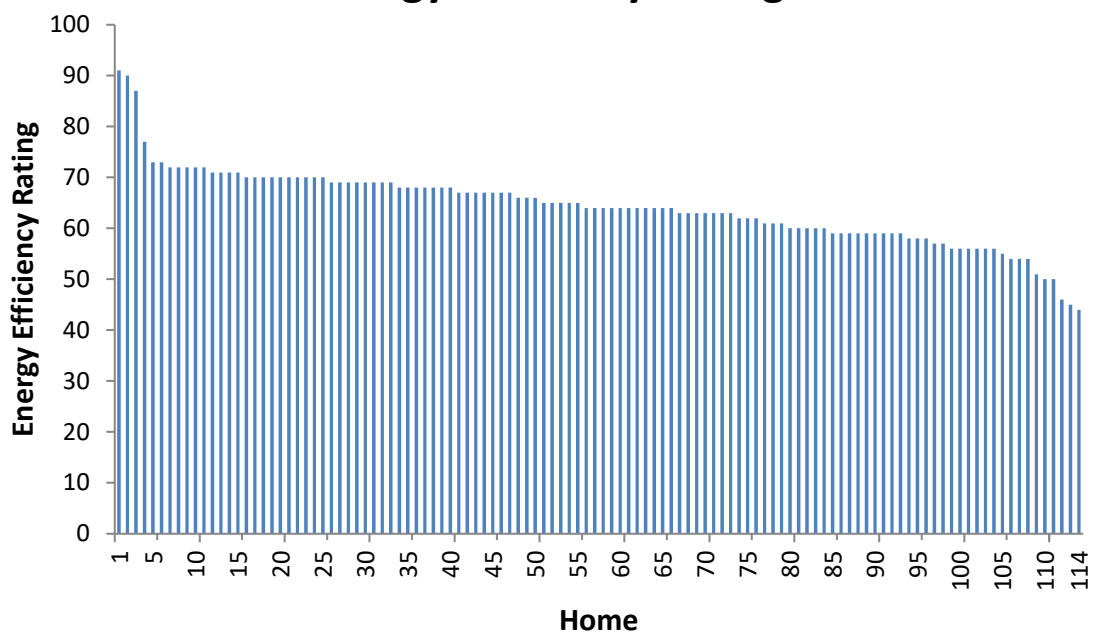
Improving the energy efficiency of your house

The energy used to heat your home could be reduced if you make your house more energy efficient, for example by insulating it or having a more efficient heating system. If you have an Energy Performance Certificate it will show the potential rating after making these efficiency improvements.

Information about saving energy in your home can be found here:

<http://www.energysavingtrust.org.uk/>

Energy Efficiency Rating



How much energy do we use?

Energy use and UK homes

The UK government is keen to reduce the energy needed to power our economy. Lower energy demands mean that we need to import less from overseas countries like Russia and the Gulf states. Producing our own energy will therefore improve the security of supply and protect us from changes in international fuel prices.

Lowering energy use also means that we can more easily meet our needs from renewable energy sources, which can help combat climate change.

The UK has the oldest housing stock in Europe. Since 1970 the number of UK homes has increased by about 40%, but the energy use has increased by only 20%^{3*}. This is because we are building more energy efficient homes, improving the efficiency of existing homes, and using more efficient heating systems.

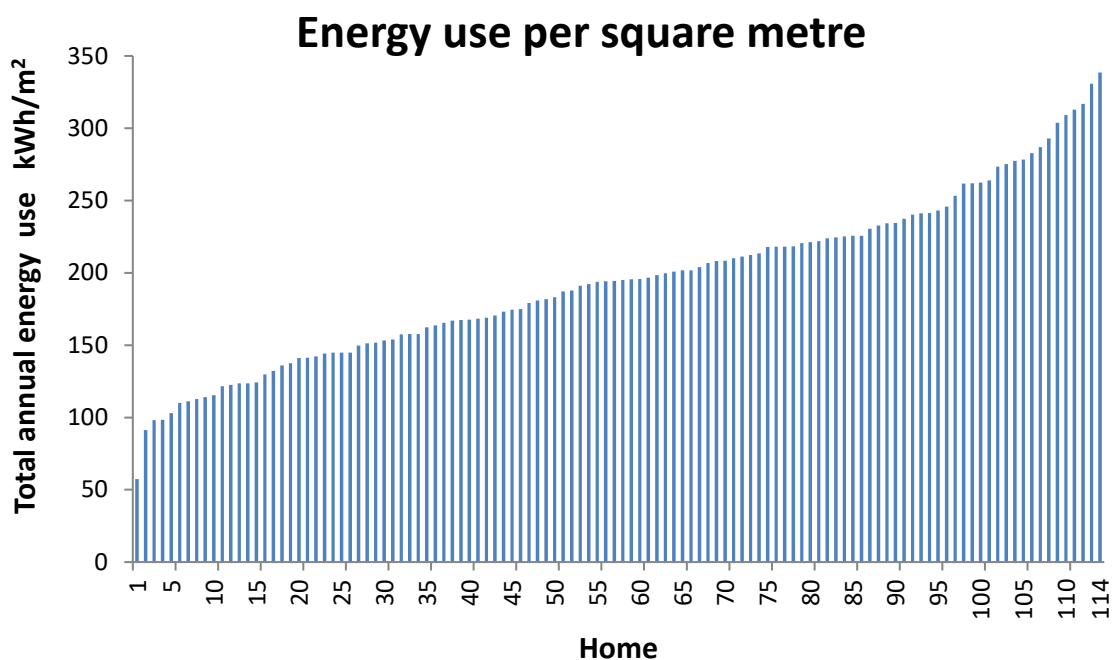
The energy used by Go Digital homes

We can compare the energy used in the Go Digital homes with the energy used in 2016 by all the other UK homes^{3*}. Energy use is measured in kWh^{4*} per square metre of your house floor area.

The average gas used by the Go Digital homes was 156kWh per square metre, which is about 6% more than the average gas used in UK homes in 2016, 147kWh/m². The average electricity use of the Go Digital homes was 43.2kWh/m², which is about 4% more than the average for all UK homes in 2016, 41.4kWh/m². The Go Digital homes were all semi-detached but the UK stock has many apartments; these can be much more energy efficient.

The energy used per square metre of floor area in each of the Go Digital homes analysed so far is shown in the chart below. The lowest energy user is home 1, on the left of the chart, and the highest energy user is home 114, on the right. The most energy hungry household used 339kWh/m², which is nearly six times more than the most frugal household, 57kWh/m².

You can see how your house compares by looking at your energy bills and dividing the total annual energy use for gas and electricity by the floor area of your house shown on your EPC, if you have one.



Energy use and global warming

Our changing climate

Climate change is one of the greatest threats to our planet. The average global temperature is gradually increasing as a result of the greenhouse effect. The rapid rise in temperature over the last century has been caused by the burning of fossil fuels, which releases greenhouse gases. The gas which contributes most to global warming is carbon dioxide^{5*}.

The government has a legal requirement to reduce the amount of greenhouse gas released in the UK to less than 80% of the 1990 figure by 2050. So far, UK greenhouse gas emissions have decreased from the 1990 levels by about 43%^{6*}.

The use of energy by UK households accounted for about 31% of UK greenhouse gas emissions^{6*}. Reducing the energy used in UK homes, and so the greenhouse gas that they release, is very important if we are to help prevent changes to our climate.

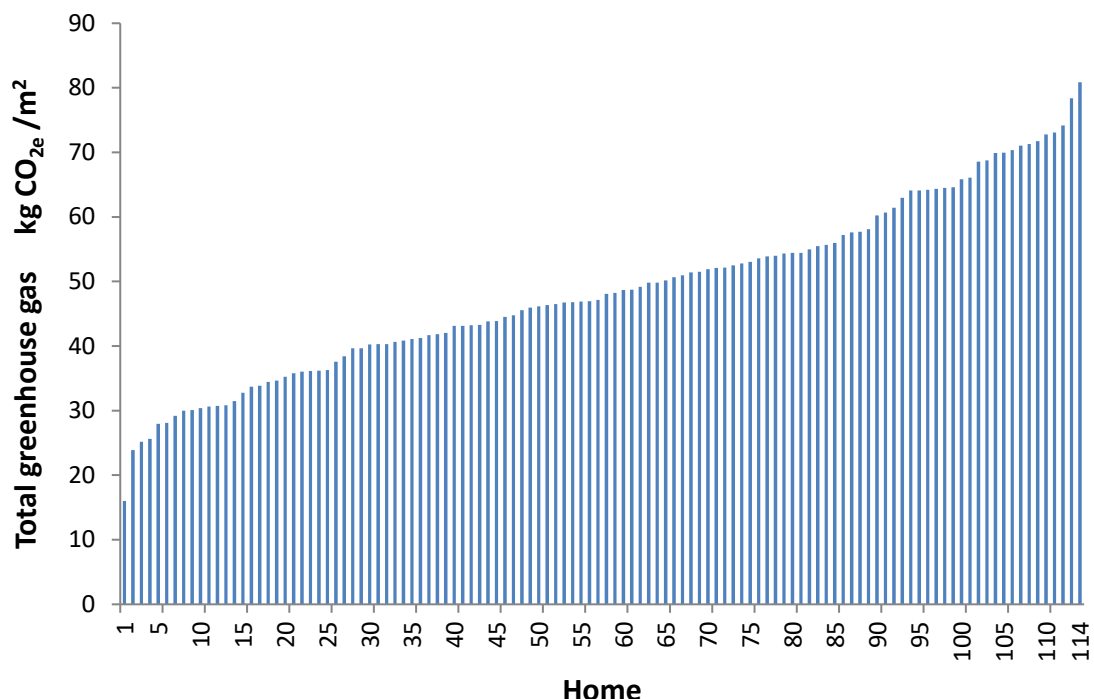
The GHG released by Go Digital homes

We calculated the greenhouse gas released from the gas and electricity used in each Go Digital home^{7*}. The average emissions were 4.9 tonnes of CO_{2e} per year, which is equivalent to 48.7kg CO_{2e} per square metre of floor area. In 2016, the average UK home released 3.8 tonnes CO_{2e} into the atmosphere, this was equivalent to 40.9kgCO_{2e} per square metre of floor area.

The chart below shows the total greenhouse gas emissions from each Go Digital home analysed so far. The lowest emissions were 16.0kgCO_{2e} per square metre, and the highest 80.9kgCO_{2e} per square metre; which is over 500% more.

You can estimate the greenhouse gas emissions from your home by using your annual gas and electricity use and the factors we provide at the back of this document^{7*}.

Greenhouse gas emissions per square metre



Is your energy expensive?

Energy prices, the long view

Here in the UK, we frequently complain about the cost of energy and the year-on-year increase in fuel prices. But is fuel expensive?

Taking the long view, the average UK household spends about 4% of their weekly income on fuel. This is about the same as the average household spent on fuel in 1990. It is much less than the 6.3% spent in 1970 when we used coal for heating and our homes were much colder. Fuel costs were at an historic low in the mid-2000s, just 2.9% of weekly household income, and prices have been increasing ever since. So, compared to the past, fuel isn't expensive but the cost is rising^{3*}.

Fuel poverty

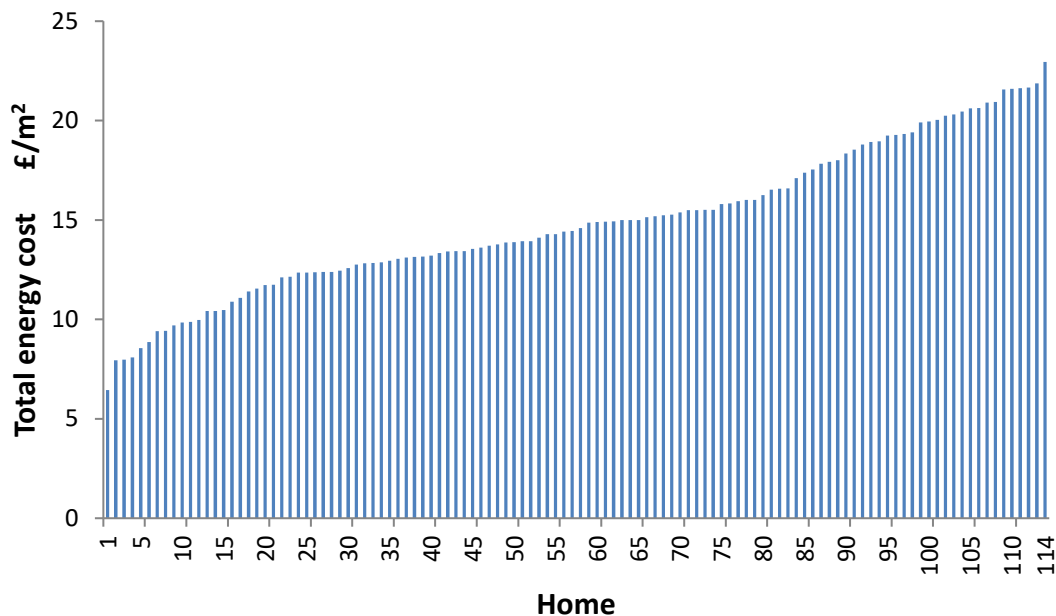
Although the cost of fuel is a small percentage of the weekly income for the average household, for households with a low income the proportion spent on fuel could be much higher. In England, 11% of all households (around 2.55 million) would find it financially difficult to heat their home to a comfortable temperature^{8*}. Winter fuel payments help the elderly to heat their homes properly.

The energy costs of Go Digital homes

We do not know how much each unit (kWh) of gas and electricity costs our Go Digital households. But if they were charged our standard rates^{9*}, the average annual gas bill would be £747 and the average electricity bill £724; a total of £14.89 per square metre.

The variation in the total annual fuel costs of the Go Digital homes analysed so far is shown in the chart below. The household that used energy most efficiently spent £6.45 per square metre on fuel (using standard rates) whereas the bill for the least efficient household was £22.96 per square metre; which is about 255% more!

Energy cost per square metre



* The Small Print

This page gives more detail about the points indicated by a star * in the rest of the leaflet.

1* The calculations assume that the main rooms of a house are heated to 21°C and the bedrooms to 19°C for 9 hours each weekday and for 16 hours at weekends. The Energy Performance Certificate gives the energy use, energy costs and the greenhouse gas emissions due to heating rooms, making hot water and for fixed lighting. These are adjusted so that houses in different locations and of different floor area can be fairly compared. The energy used by electrical appliances, gadgets, fridges, freezers, washing machines etc. is not included because these are not an integral part of the house (they may change when people move house).

2* Each year the government undertakes a survey of English housing. The information given is for the 14.7 million owner-occupied English homes in 2016. The published reports and data tables contain a lot of useful information. The latest published survey data can be found here: <https://bit.ly/2DEiymk>.

3* Information on the energy used by UK homes can be found here: <https://bit.ly/1zC4opS>. The UK Housing Energy Fact File is a more readable publication. The last version to be published can be found here: <https://bit.ly/1NI7qBo>.

4* Energy is measured in kilowatt hours (kWh). A standard domestic kettle has a power output of 3 kilowatts. If the kettle is turned on for 20 minutes it will consume one kWh of electricity.

5* Although carbon dioxide (CO₂) emissions are the largest contributor to climate change, other gasses such as methane, and nitrous oxide, also have a greenhouse effect. Each gas has a different greenhouse gas (GHG) intensity. For example, one kilogram (kg) of methane has an effect equivalent to 30kg of carbon dioxide. So, we express the effect of all GHGs as an equivalent release of carbon dioxide (CO_{2e}).

6* The latest official GHG emissions for the UK are for 2016. The GHG emissions from each sector of the economy and are reported here: <https://bit.ly/2E4rlsb>.

7* We calculated the GHG emissions from the gas and electricity used. We assumed that 0.208 kg of CO_{2e} is released per kWh of gas burned and 0.398 kg of CO_{2e} per kWh of electricity used.

8* The latest information on fuel poverty in England can be found here: <https://bit.ly/2OtSqID>.

9* We assumed a standard cost for gas of 4.32p per kWh plus £95 per year standing charge and a standard cost for electricity of 15.32p per kWh plus £67 per year standing charge.

Sources of useful information

The Energy Savings Trust web site, explains how to save energy in your home:

<http://www.energysavingtrust.org.uk/>.



EPSRC

Engineering and Physical Sciences
Research Council



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We have also calculated the greenhouse gas released into the atmosphere as a result of this energy use. We compare your energy use and greenhouse gas emissions to those of other UK homes and to the other homes in the Go Digital study.

We have summarised our findings in this personalised leaflet.

Thank you for helping us, without households like yours, our study would not have been possible.



The energy efficiency of your house

Energy performance calculations

The information from your home energy survey was used to calculate how much gas would be used for heating and hot water if you heated all the rooms in your house in a standard way - for nine hours each week day and all day at the weekends^{1*}. The calculations produce an Energy Efficiency Rating of your house. This is the rating shown on the Energy Performance Certificate which is needed when people buy or sell a house.

The energy efficiency of your house

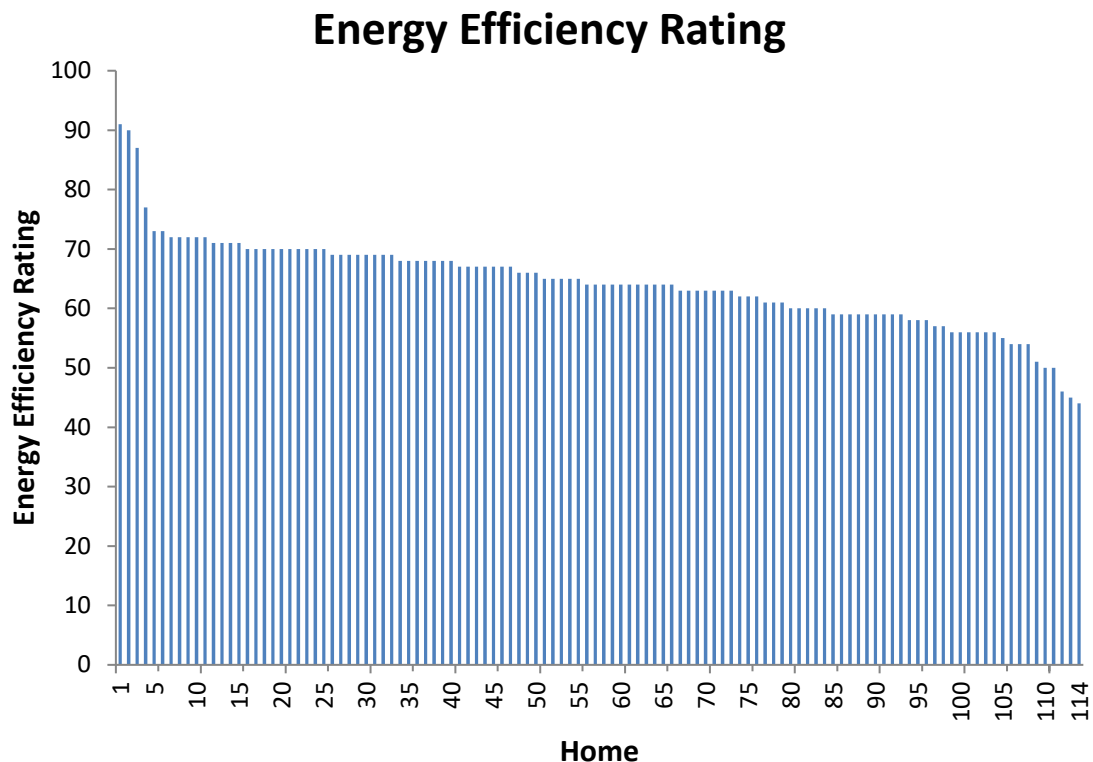
The Energy Efficiency Rating of your house was 54, which is Band E.

The average Energy Efficiency Rating of all owner-occupied English homes^{2*} was 60.5, Band D. Your house is therefore less energy efficient than the average.

The energy efficiency rating for all the Go Digital houses is shown in the chart below. The most efficient house is number 1 on the left of the chart and the least efficient house is number 114; your house is number 106.

Information about saving energy in your home can be found here:

<http://www.energysavingtrust.org.uk/>



How much energy do you use?

Your actual energy use

We measured your gas and electricity use every half hour and have analysed the data we collected between September 2015 and August 2016.

For that year, your gas use was 17,656kWh^{3*} and your electricity use was 2,810kWh, giving a total of 20,466kWh. So, 86% of the energy used was gas and 14% electricity.

Comparing your energy use to other UK homes

We can compare the energy you used to the energy used in 2016 with all the other UK homes^{4*}. Energy use is measured in kWh per square metre of your house floor area. The floor area of your house is 78m², which is much smaller than the floor area of the average English owner occupied house, 108m². It is smaller than the average floor area of the Go Digital houses, 100m².

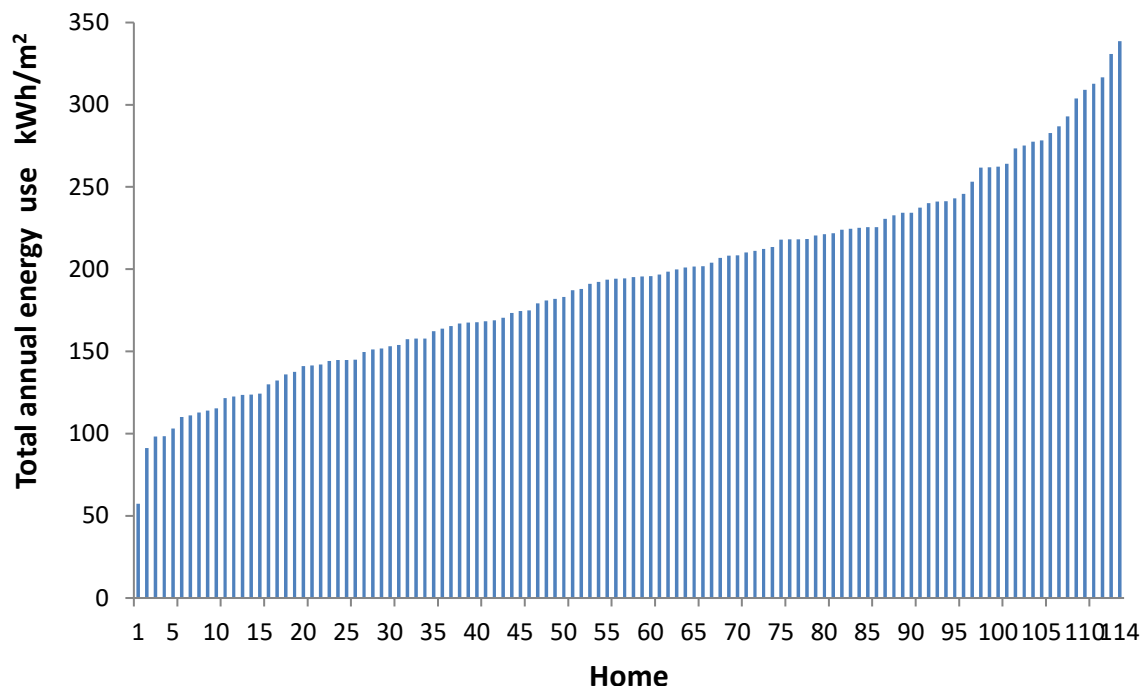
Your gas use was 226.4kWh per square metre of floor area; this is 54% more than the average for all UK homes in 2016, which was 146.9kWh/m². Your electricity use was 36.0kWh/m², which is 13% less than the average electricity use of all UK homes in 2016, which was 41.4kWh/m².

Comparing your energy use to other Go Digital homes

We have analysed the gas and electricity used in 114 Go Digital Homes. The average gas use was 156kWh/m² and the average electricity use was 43.2kWh/m². You used more gas than the average and less electricity.

The energy used per square metre of floor area in each of the Go Digital homes is shown in the chart below. The lowest energy user is home 1, on the left of the chart, and the highest energy user is home 114; your home is number 100. So, 14 Go Digital homes used more energy per square metre of floor area and 99 homes used less.

Energy use per square metre



What is your contribution to global warming?

Our changing climate

Climate change is one of the greatest threats to our planet. The average global temperature is gradually increasing as a result of the greenhouse effect. The rapid rise in temperature over the last century has been caused by the burning of fossil fuels, which releases greenhouse gases. The gas which contributes most to global warming is carbon dioxide^{5*}.

The government has a legal requirement to reduce the amount of greenhouse gas released in the UK to less than 80% of the 1990 figure by 2050. So far, UK greenhouse gas emissions have decreased from the 1990 levels by about 43%^{6*}.

The use of energy by UK households accounted for about 31% of UK greenhouse gas emissions^{7*}. Reducing the energy used in UK homes, and so the greenhouse gas that they release, is very important if we are to help prevent changes to our climate.

The greenhouse gases released from the energy you use

The gas you burned released 3.7 tonnes of carbon dioxide (tCO_{2e})^{7*} into the atmosphere. The electricity you used resulted in the release of 1.1 tonnes of carbon dioxide.

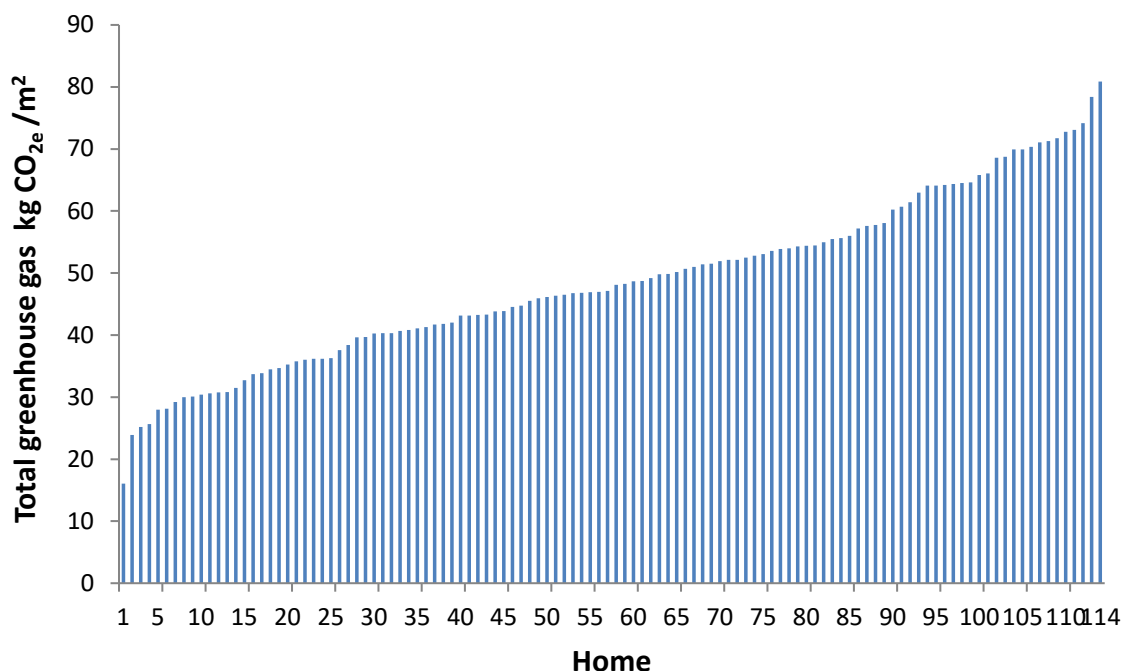
Your impact on our climate compared with others

The gas and electricity you used in your home resulted in the release of 61.4kgCO_{2e} per square metre of floor area. In 2016, the average UK home released 40.9kgCO_{2e} per square metre of floor area. Your house released 50% more than the average for all UK homes.

The chart below shows the total greenhouse gas emissions from the gas and electricity used in each Go Digital home. The average emissions were 48.7kgCO_{2e} per square metre of floor area. The total from your home was 26% more than this.

The lowest emissions were from home number 1 the highest emissions from home 114; your home is number 92. So, 22 Go Digital homes released more greenhouse gas and 91 released less.

Greenhouse gas emissions per square metre



Is your energy expensive?

Energy Prices, the long view

Here in the UK, we frequently complain about the cost of energy and the year-on-year increase in fuel prices. But is fuel expensive?

Taking the long view, the average UK household spends about 4% of their weekly income on fuel. This is about the same as the average household spent on fuel in 1990. It is much less than the 6.3% spent in 1970 when we used coal for heating and our homes were much colder. Fuel costs were at an historic low in the mid-2000s, just 2.9% of weekly household income, and prices have been increasing ever since. So, compared to the past, fuel isn't expensive but the cost is rising^{4*}.

But, how do your fuel costs compare with other UK homes and the other Go Digital homes?

Your energy costs

We do not know how much each unit (kWh) of gas and electricity costs you because we do not know what tariff you are on. But if you paid at our standard rate^{8*}, based on your energy use, your annual gas bill would be £858 and your annual electricity bill £498. This is a total cost of £17.37 per square metre of floor area.

Your energy costs compared to others

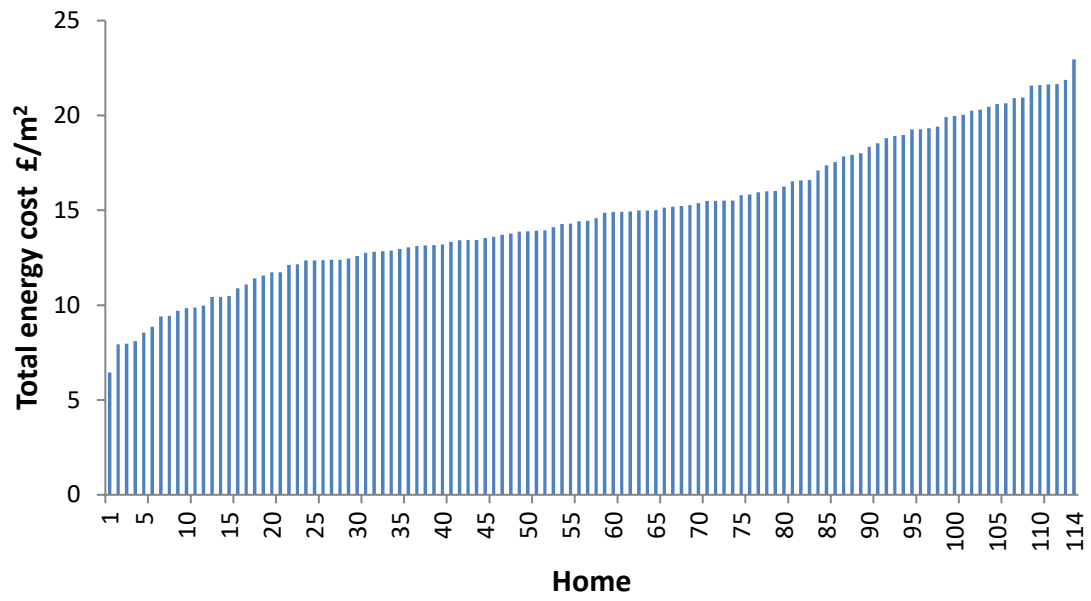
The average gas bill of all UK homes in 2016 was £620 and the average electricity bill £549; which was £15.59 per square metre of floor area. Using our standard costs, your bills per square metre are therefore 11% more than the UK average.

At our standard costs, the average annual gas bill of the Go Digital homes was £747 and the average electricity bill £724; a total of £14.89 per square metre. The annual bill for the Go Digital household that used energy most efficiently was £6.45 per square metre, and the bill for the least efficient household £22.96 per square metre.

The variation in the total annual fuel costs of the Go Digital homes is shown in the chart below. Your house is number 85. So, per square metre of floor area, 29 households spent more on their energy and 84 homes spent less.



Energy cost per square metre



*The Small Print

This page gives more detail about the points indicated by a star * in the rest of the leaflet.

1* The calculations assume that the main rooms of a house are heated to 21°C and the bedrooms to 19°C for 9 hours each weekday and for 16 hours at weekends. The Energy Performance Certificate gives the energy use, energy costs and the greenhouse gas emissions due to heating rooms, making hot water and for fixed lighting. These are adjusted so that houses in different locations and of different floor area can be fairly compared. The energy used by electrical appliances, gadgets, fridges, freezers, washing machines etc. is not included because these are not an integral part of the house (they may change when people move house).

2* Each year the government undertakes a survey of English housing. The information given is for the 14.7 million owner-occupied English homes in 2016. The published reports and data tables contain a lot of useful information. The latest published survey data can be found here: <https://bit.ly/2DEiymk>.

3* Energy is measured in kilowatt hours (kWh). A standard domestic kettle has a power output of 3 kilowatts. If the kettle is turned on for 20 minutes it will consume one kWh of electricity.

4* Information on the energy used by UK homes can be found here: <https://bit.ly/1zC4opS>. The UK Housing Energy Fact File is a more readable publication. The last version to be published can be found here: <https://bit.ly/1NI7qBo>.

5* Although carbon dioxide (CO₂) emissions are the largest contributor to climate change, other gasses such as methane, and nitrous oxide, also have a greenhouse effect. Each gas has a different greenhouse gas (GHG) intensity. For example, one kilogram (kg) of methane has an effect equivalent to 30kg of carbon dioxide. So, we express the effect of all GHGs as an equivalent release of carbon dioxide (CO_{2e}).

6* The latest official GHG emissions for the UK are for 2016. The GHG emissions from each sector of the economy and are reported here: <https://bit.ly/2E4rlsb>.

7* We calculated the GHG emissions from the gas and electricity used. We assumed that 0.208 kg of CO_{2e} is released per kWh of gas burned and 0.398 kg of CO_{2e} per kWh of electricity used.

8* We assumed a standard cost for gas of 4.32p per kWh plus £95 per year standing charge and a standard cost for electricity of 15.32p per kWh plus £67 per year standing charge.

Sources of useful information

The Energy Savings Trust web site, explains how to save energy in your home: <http://www.energysavingtrust.org.uk/>.



EPSRC

Engineering and Physical Sciences
Research Council

Go Digital Study
School of Architecture, Building and Civil Engineering
Loughborough University
LE11 3TU
17th October 2018

Address here

Dear [xxxx],

Thank you again for your involvement in the Go Digital Study. We are grateful for all your support.

This letter provides you with important information related to your electricity consumer unit, gas meter, and certain other items that might be present in your house. As you know, monitoring was conducted using devices attached to the electricity consumer unit and the gas meter, and using sensors placed in rooms, with data transmitted via a 'Gateway' device.

The monitoring devices included:

An electricity monitoring device (see Photograph 1), connected to your electricity consumer unit;

A gas monitoring device (see Photograph 2), connected to your gas meter;

A number of temperature sensors (see Photograph 3) located in various rooms;

A 'Gateway' device for transmitting data and any related connecting cables (see Photograph 4).

Some houses also had a Wi-Fi Booster (see photograph 5)



We arranged for these devices to be removed, but some may have been retained by you by choice, or inadvertently been left at your property.

If there are any devices remaining at your property, we would like to offer you removal and collection of these monitoring devices. In particular, if the electricity monitoring device is still attached to your consumer unit, **it needs to be removed by a qualified electrician.**

We are happy to arrange and pay for our qualified electrician to remove all devices, until the 24th October 2018 .

After this date, we need to make you aware that removal will become your responsibility. The ‘Go Digital Study’ and Loughborough University will accept no liability related to any devices that may remain after this date.

Remaining electrical devices at your property should then be disposed of via your usual local authority recycling arrangements for electrical items and batteries.

ACTION:

Do please contact us to arrange removal of any devices. We will be pleased to organise this.

Just contact us at:

godigital@lboro.ac.uk or by phoning 01509 22xxxx.

We look forward to hearing from you.

Yours faithfully,

[signature]

Professor Kevin Lomas,

Principal Investigator of the Go Digital Study

On behalf of the Go Digital Team



The information you provide in this study will be held securely by Loughborough University; no one will be identifiable in the results and your personal details will not be passed to other people or organisations outside the project team. The research is being carried out in accordance with the Data Protection Act and Loughborough University's ethical procedures.

Enc. Minor Electrical Works Certificate for your records.

Go Digital Study
School of Architecture, Building and Civil Engineering
Loughborough University
LE11 3TU
18th October 2018

Present occupier address

Dear Householder,

We are writing to thank you (and any previous occupants) for the involvement of your home in the Go Digital Study which is now due to end.

While your house is no longer part of the study, this letter provides you with important information related to equipment that was installed in your property as part of the research project. As you may know, monitoring was conducted using devices attached to the electricity consumer unit and the gas meter, and using sensors placed in rooms, with data transmitted via a 'Gateway' device. We want to ensure that none of our monitoring devices remain in your house.

These devices included:

An electricity monitoring device (see Photograph 1), connected to your electricity consumer unit;

A gas monitoring device (see Photograph 2), connected to your gas meter;

A number of temperature sensors (see Photograph 3) located in various rooms;

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Gateway troubleshooting:

⇒If the green '@' is flashing this can normally be fixed by unplugging the mains cable from the back of the gateway and then plugging it back in.

⇒If there is a red downwards arrow showing this just means a firmware update is underway

⇒If no icons are showing please check the gateway is plugged into a mains power supply, and the Ethernet cable is plugged into your internet router

If the green power (ⓘ) icon still won't appear let us know and we can arrange to visit and try and sort the problem!

Email: godigital@lboro.ac.uk

Phone: 01509 22xxxx

As the season of cheer draws near
Spare a thought for the data we hold dear
With nights growing darker and mornings seeing ice
We ask, please don't switch off our data device.
For if it's unplugged for those twinkling lights
We lose all of our data and have sleepless nights
So we'd love you to let the power icon keep glowing
Then our winter data will stay bright, even if it's snowing!

Seasons Greetings

From *Ashley*

, On behalf of the Go Digital team