



Department
of Energy &
Climate Change

DECC Non - domestic building energy use project phase I

Annex 5: Methodology Appendix

June 2013

1. Questionnaires / guides for the comparison stage

1.1 Comparison stage: telephone survey questionnaire

1.1.1 Introduction

We adopted the following approach in implementing the telephone survey:

- The recruitment script was used to invite the respondent to participate in the study and explain that this would comprise a telephone discussion, followed by a subsequent site audit
- The telephone conversation was scheduled with the respondent at a time convenient to them
- On completion of the telephone conversation, we arranged a suitable time for the site audit to be completed
- The site audit was then conducted at the agreed time.

1.1.2 Recruitment script

Database information:

- Experian reference number
- Building name
- Address (including post code)
- Respondent details:
 - i. Name
 - ii. Job title
 - iii. Organisation name
 - iv. Telephone number
 - v. Email address
- An indication of whether we want them to undertake the telephone survey or intermediate survey

INTRODUCTION: Hello my name is X and I am calling on behalf of the Department of Energy and Climate Change (DECC).

We are currently carrying out some work for DECC speaking to food and mixed retailers to understand energy use in the sector. In particular we want to find out how much energy is being used in different types of shops, how it is distributed e.g. heating, lighting etc. and what sort of things are being done to reduce energy use in the sector.

For large retailers contacted by/through DECC

I understand you will have received an email from DECC about the work, requesting your participation.

[Ask all]

Do you have some time to speak to us about this now?

Possible outcomes:

- Yes –
 - Continue
 - No - make an appointment for a convenient time
- No – who would be a good person to talk to? (Take details of name and number and telephone alternative contact)

[Inform all]

The Government are undertaking this work as they need reliable data about energy use in the non-domestic building sector along with an understanding of opportunities to reduce energy use. The data you provide will be shared with DECC and will inform an important part of the evidence base for government policy in this area; however your responses will remain confidential and under no circumstances would the data for your individual site be reported in the public domain

[For those selected for intermediate survey]

For us to understand which method is best for obtaining information about energy use from retailers we are experimenting with two different approaches:

1. A telephone conversation with the person who is responsible for energy use at the shop followed by a short online self completion form and follow-up telephone discussion
2. A visit to your shop.

We would like you to complete the online form and have received the site audit by the middle of February. Will you have some time over the next month to help us with this work?

[For those selected for telephone survey]

For us to understand which method is best for obtaining information about energy use from retailers we are experimenting with two different approaches:

1. A telephone conversation with the person who is responsible for energy use at the shop
2. A visit to your shop.

We would like to complete the telephone conversation and site audit by the middle of February. Will you have some time over the next month to help us with this work?

[If yes - ask all]

Do you have time for a conversation about how you use energy within your shop now?

Possible outcomes:

- Yes –
 - Continue
 - No - make an appointment for a convenient time

- Require further information – offer to send e-mail or letter with further information and schedule a time to call back.

Additional information:

- The telephone conversation will take a maximum of 20 minutes; it could be shorter.
- The database was provided by Experian, a commercial database provider.

1.1.3 Survey

[SCREEN QUESTION]

We are interested in understanding energy use at <CATI system to automatically enter name and location of site> can I just check are you responsible for energy use at this shop?

- Yes - CONTINUE
- No – I would also like to ask you a few questions about the building you are in and the type of equipment e.g. heating, you have in your shop. Is this something you know about?
 - Yes – CONTINUE
 - No – Ask for contact details for alternative contact

[BUILDING FUNCTION]

I'd like to start by finding out some information about your shop. What products do you sell?¹

Can I just check is it located in a:

- Town centre – high street
- Town centre – other
- Out of town centre / secondary location
- Retail park
- Shopping centre
- Residential shopping parade

Is your shop:

- Part of a chain – how many stores are there?
- A franchise
- Independent

What is the net floor area of the premise? (sq ft) Researcher to code whether:

- Actual
- Estimate
- Rough guess

(If unsure provide respondent with an indication e.g. a tennis court is 50 x 95 = 4750 sq ft)

Is this all retail space?

- Yes
- No

¹ Code frame for this question to be inserted once we have agreed the Thompson codes that fall within the scope of the study.

[If no] What else is included in the area you occupy? Please indicate the proportion for each:

- a. Storage rooms / warehouse
- b. Staff room area
- c. Car park
- d. Office space
- e. Flat above shop
- f. Other – please describe

[OCCUPANCY]

Is the building your shop is in owner occupied or leased?

- a. Owner occupied
- b. Leased

[If owner occupied] Is any part of the retail premises sub let?

- a. Yes:
 - i. What floor area? (sq ft)
 - ii. Who to?
- b. No

[If building is leased] What is the length of the lease? (Capture in months)

Is this a full repairing and insurance lease?

- a. Yes
- b. No – why not?

What are the opening hours for the shop?

How many hours is the shop occupied for during a typical day? (E.g. when do staff members arrive and leave)

What are the operating hours of the other uses (CATI software to recall other functions included in the area they occupy).

[BUILDING DETAILS]

Approximately how old is the building?

- a. Pre 1990
- b. 1900 – 1939
- c. 1940 – 1985
- d. 1986 – 1990
- e. 1991 – 2006
- f. Post 2006
- g. Don't know

How many storeys does the building have?

- a. Single storey
- b. 2 storeys
- c. 3 storeys
- d. 3+ storeys

Is the construction of the building:

- a. Steel frame

- b. Timber frame
- c. Cast concrete wall
- d. Breeze block
- e. Metal cladding
- f. Don't know

[ORGANISATIONAL FACTORS]

I'd like to move to speak about your role and how energy consumption is managed in the shop. How long have you been in your position for?

On average what proportion of your working week is spent on responsibilities concerned with energy usage within the building?

- a. Less than 10%
- b. Between 10 and 24%
- c. Between 25 and 49%
- d. Between 50 and 74%
- e. Between 75 and 100%

Are you responsible for monitoring energy consumption?

- a. Yes
- b. No

Do you have objectives to reduce energy consumption?

- a. Yes
- b. No

Is there a building energy management system in place?

- a. Yes
- b. No

What does the energy management system include?

- a. Space heating
- b. Hot water
- c. Lighting
- d. Space cooling
- e. Other – please describe

[If yes] Are you responsible for operating the energy management system?

- a. Yes
- b. No – who is (obtain contact information in case we need to speak to them)

Does your organisation have any of the following?

- a. An environmental policy
- b. Corporate Social Responsibility objectives
- c. Certification to ISO 14001

Do any of these involve objectives to reduce energy consumption or carbon emissions?

- a. Yes – what are these objectives?
- b. No

Do you have training or other processes to encourage and support staff in reducing energy consumption?

- a. Yes – what does this involve?
- b. No

[TYPE OF ENERGY USED]

What type of energy supplies the building?

- a. Electric - do you have a separate meter for your shop?
- b. Gas – do you have a separate meter for your shop?
- c. Central Heat (if in a shopping centre or on district heating) – do you have a separate meter for your shop?
- d. Central cooling – do you have a separate meter for your shop?

(For each type, if there are non-retail uses of the premises) Does the meter cover your shop alone or are other uses included?

Are any parts of your shop sub metered?

- a. Yes – why?
- b. No – why not?

[If yes] How are the sub meters used in the building? Which equipment are sub metered?

- a. Space Heating
- b. Hot water
- c. Lighting
- d. Space cooling
- e. Refrigeration for chilled cabinet, freezers or a cold store
- f. Other?
 - a. Yes
 - b. No
 - c. Not applicable

What areas are sub metered (CATI system to select areas as relevant)

- a. Shop floor
- b. Storage rooms / warehouse
- c. Staff room area
- d. Car park
- e. Office space
- f. Flat above shop
 - a. Yes
 - b. No

[ENERGY CONSUMPTION]

We would like to understand the energy consumption of the building. In particular we would like to know the annual electricity and/ or gas consumption of the building (if you have your fuel bills to hand that would be really helpful).

[If supplied by electric] What is the annual electricity consumption of the premises in kWh?

- a. Answer given
- b. Don't know

[If answer given] Researcher to record the accuracy of data:

- i. Actual – data taken from an energy bill

- ii. Estimate – assumption based on looking at a previous energy bill
- iii. Rough guess

[If supplied by electric and don't know annual consumption in kWh] What is the annual electricity consumption of the premises in £?

- a. Answer given
- b. Don't know

[If answer given] Researcher to record the accuracy of data:

- i. Actual – data taken from an energy bill
- ii. Estimate – assumption based on looking at a previous energy bill
- iii. Rough guess

[If cannot provide annual spend] Do you know what your monthly or quarterly spend is on electricity?

- a. Monthly spend (£)
- b. Quarterly spend (£)

[If supplied by gas] What is the annual gas consumption of the building in kWh?

- Answer given
- Don't know

Researcher to record the accuracy of data:

- i. Actual – data taken from an energy bill
- ii. Estimate – assumption based on looking at a previous energy bill
- iii. Rough guess

[If supplied by gas and don't know annual consumption in kWh] What is the annual gas consumption of the premises in £?

- a. Answer given
- b. Don't know

Researcher to record the accuracy of data:

- i. Actual – data taken from an energy bill
- ii. Estimate – assumption based on looking at a previous energy bill
- iii. Rough guess

[If cannot provide annual spend] Do you know what your monthly or quarterly spend is on gas?

- a. Monthly spend (£)
- b. Quarterly spend (£)

[If supplied by electric and gas and don't know separate consumption] What is the annual electricity and gas consumption of the premises in £?

- a. Answer given
- b. Don't know

Researcher to record the accuracy of data:

- i. Actual – data taken from an energy bill
- ii. Estimate – assumption based on looking at a previous energy bill
- iii. Rough guess

[If cannot provide annual spend] Do you know what your monthly or quarterly spend is on electricity and gas?

- a. Monthly spend (£)

- b. Quarterly spend (£)

Do your meters and your fuel bills relate to your shop alone or are other areas included?

- a. Shop alone
- b. Other areas

Which other areas do they relate to? (CATI software to recall other areas).

[ENERGY CONSUMPTION BY END USES]

Thinking about the energy you use in your building. Do you have:

- a. Space Heating
- b. Hot water
- c. Lighting
- d. Space cooling
- e. Refrigeration for chilled cabinet, freezers or a cold store
- f. (where appropriate) Ovens (e.g. for a bakery)
- g. (where appropriate) Café
- h. (where appropriate) Dry cleaners
- i. Other energy uses – what are these?

[HEATING]

Do you use gas or electricity for heating?

- a. Gas
- b. Electricity

[IF GAS] Do you have boilers?

- a. Yes
- b. No

[If yes] How old is the boiler?

Do you know the size of the boiler in kW?

- a. Yes – please describe
- b. No

Is the system:

- a. Warm air
- b. Radiator
- c. Under floor
- d. Other – please describe

Is there radiant heating in place?

- a. Yes
- b. No

[If yes] How many heaters do you have?

[If yes] What is their average size? In kW

[IF ELECTRICITY]: Is there a split heating system?

- a. Yes - heating system only
- b. Yes – cooling system only
- c. Yes – both heating and cooling system
- d. No

How many are there?

What is their average size? in kW

Are there fan heaters in use?

- a. Yes - how many? What is their average size? in kW
- a. No

Are radiant heaters in use?

- b. Yes - how many? What is their average size? in kW
- a. No

Do you get heat from a central plant or district heating scheme?

- a. Central plant
- b. District heating scheme

Is your heating controlled by:

- a. thermostats
- b. timers

Are different areas of the shop controlled separately?

- a. Yes
- b. No

Do you have a maintenance contract for your heating?

- a. Yes
- b. No

Is your heating sub metered?

- a. Yes
- b. No

[LIGHTING]

Thinking about the lights in your shop (not display lighting), which of the following do you have? Please indicate a proportion for each:

- a. Fluorescent strip lighting T12
- b. Fluorescent strip lighting T8
- c. Fluorescent lighting T5
- d. Compact Fluorescent Lighting
- e. Halogen down lights or spotlights
- f. Sodium lighting
- g. Other – please describe

Are your lights controlled by:

- a. Occupancy sensors
- b. Timers

c. Other

[If occupancy sensors] What proportion of your lights are controlled by occupancy sensors (%)

[If timers] What proportion of your lights are controlled by timers? (%)

Do you have a maintenance contract for your lighting?

- a. Yes
- b. No

Is your lighting sub metered?

- a. Yes
- b. No

[SPACE COOLING]

Thinking about space cooling do you use:

- a. Your own central chiller plant
- b. Room air conditioning
- c. Other – please describe

[If central chiller plant] Is this powered by:

- a. Gas
- b. Electricity

What is the size of the chiller plant in kW?

[If room air conditioning] How many air conditioning units are there?

What is their average size? in kW

Do you get cooling from a central plant (e.g. in a shopping centre) or district cooling?

- a. Central plant
- b. District heating

Is the cooling controlled by:

- a. Thermostats
- b. Timers

Is the chiller divided into zones?

- a. Yes – how many?
- b. No

Do you have a maintenance contract for your cooling system?

- a. Yes
- b. No

Is your cooling system sub metered?

- a. Yes
- b. No

[REFRIGERATION]

What refrigeration do you have:

- a. Chilled cabinets
- b. Freezers
- c. Cold store

Do you have a central chiller plant?

- a. Yes
- b. No

What size is the chiller in kW?

Is it powered by electricity?

- a. Yes
- b. No

[If chilled cabinets] How many chilled cabinets are there?

For each chilled cabinet:

- a. What is its volume? (litres)
- b. What is their average size? in kW

Do the chilled cabinets have doors?

- a. All
- b. Some
- c. None

Do the chilled cabinets have night blinds?

- a. All
- b. Some
- c. None

Do the chilled cabinets have covers?

- a. All
- b. Some
- c. None

[If freezers] Are these:

- a. Upright – how many are there? What is their average volume? (litres)
- b. Chest - how many are there? What is their average volume? (litres)

Do the freezers have doors?

- a. All
- b. Some
- c. None

Do the freezers have night blinds?

- a. All
- b. Some
- c. None

Do the freezers have covers?

- a. All
- b. Some
- c. None

[If a cold store] How big is the cold store? (Capture height in feet)

What is the size of the cold store in kW?

Do you have a maintenance contract for your refrigeration system?

- a. Yes
- b. No

Is your refrigeration sub metered?

- a. Yes
- b. No

[HOT WATER]

Is your hot water produced centrally or locally?

- a. Centrally
- b. Locally

Is it heated by:

- a. Electricity
- b. Gas

Is your hot water:

- a. Instant
- b. Stored

How many heaters are there?

[For each heater] What is the average size of a heater? (kW)

Do you have a maintenance contract for your hot water system?

- a. Yes
- b. No

Is your hot water sub metered?

- a. Yes
- b. No

[IF OVENS – WHERE APPROPRIATE]

How many ovens do you have?

On average, how large are they – kW/volume?

Do you have a maintenance contract for your ovens?

- a. Yes
- b. No

Are your ovens sub metered?

- a. Yes
- b. No

[If CAFE – WHERE APPROPRIATE]

How large is your café? E.g. number of seats)

Does it serve?

- a. Hot drinks
- b. Hot meals

Is your café sub metered?

- a. Yes
- b. No

[IF DRY CLEANERS – WHERE APPROPRIATE]

How many dry cleaning machines do you have?

[For each machine] What is the average size of a machine (size in kg capacity?)

Do you have a maintenance contract for your machines?

- a. Yes
- b. No

Is your dry cleaners sub metered?

- a. Yes
- b. No

[ACTION TAKEN AND CONSIDERED]

We are interested in action you may have taken over the last two years to improve the energy efficiency of your shop. Have you taken any of the following actions (where action not taken check whether it is something they have considered):

- a. Upgraded or replaced equipment with energy efficient alternatives
 - What have you done?
 - Have you measured the energy you have saved?
 - If not, how much energy did you expect to save?
- b. Encouraged staff to change their behaviour to reduce energy consumption
 - a. What have you done?
 - b. Have you measured the energy you have saved?
 - c. If not, how much energy did you expect to save?
- c. Implemented an energy efficiency policy with targets
 - a. What have you done?
 - b. Have you measured the energy you have saved?
 - c. If not, how much energy did you expect to save?
- d. Improved the monitoring of energy consumption

- a. What have you done?
 - b. Have you measured the energy you have saved?
 - c. If not, how much energy did you expect to save?
- e. Other – please describe

[RETURN ON INVESTMENT]

In terms of return on investment, what is the maximum payback period for energy efficiency projects to be approved? Why do you say that?

- a. One year
- b. Three years
- c. Five or more years

[ARRANGING THE SITE AUDIT]

Researcher to organise a suitable day & time for the site audit visit.

[CLOSE OF INTERVIEW]

Thank you very much for your time that's all the questions I have. Is it ok to come back to you if I need to clarify anything about the conversation with you?

- a. Yes
- b. No

As part of our quality procedures a research manager may be in contact with you to verify some of your responses, is this ok?

- a. Yes
- b. No

Finally, would you like to take Databuild's number or the Market Research Society Free phone number to confirm this is a genuine market research study?

- a. Databuild – 0121 687 1144
- b. MRS number – 0500 396 999
- c. No
- d. Both

1.2 Comparison stage: Online/postal survey

Retailer Survey – Energy Use in the Retail Sector

Thank you very much for agreeing to take part in this work for the Department of Climate Change.

The aim of this work is to understand energy use in the food retail and mixed retail sector. In particular we want to find out how much energy is being used in different types of shops, how it is distributed e.g. heating, lighting etc. and what sort of things are being done to reduce energy use in the sector.

If you are experiencing problems completing the survey, please contact Adrian Talbot on 0121 687 1144.

Please tick boxes to answer question and write in any where information is requested. Feel free to include any additional information in the spaces provided. If you do not wish to answer a particular question, please leave the response blank. If you do not have information for a particular question, please leave blank.

For postal survey: please return the survey in the envelope provided by Wednesday 22nd February 2012.

Section 1 – TO BE COMPLETED BY ALL

Your details

Can you please fill in the following details about yourself:

First name	
Surname	
Shop name	
Shop address	
Job title	
Length in position (years)	

Shop details

Can you please fill in the following details about your shop:

We understand that the building is primarily used as a retail premise. What do you sell?	
Which of the following best describes your location (please select one):	<input type="checkbox"/> Town centre – high street

		<input type="checkbox"/> Town centre - residential shopping parade <input type="checkbox"/> Retail park <input type="checkbox"/> Shopping centre
Is your shop (please select one):		<input type="checkbox"/> Part of a chain – how many stores are there? _____ <input type="checkbox"/> A franchise <input type="checkbox"/> Independent
What is the net floor area of the premise?	m ² OR sq ft	Is this (please select one): <input type="checkbox"/> Actual data <input type="checkbox"/> An estimate <input type="checkbox"/> A rough guess If unable to provide this information, can you provide approximate dimensions of your shop? (Specify metric or imperial) _____
Is it all retail space?	<input type="checkbox"/> Yes <input type="checkbox"/> No	[If no] What else is included? <input type="checkbox"/> Storage room / warehouse <input type="checkbox"/> Staff room area <input type="checkbox"/> Office space <input type="checkbox"/> Other – describe _____
Is there a car park:	<input type="checkbox"/> Yes <input type="checkbox"/> No How many parking spaces are there? _____	

Building details

The following questions are about the building you are in:

How old is the building? (approximately) (Please select one):	<input type="checkbox"/> Pre 1990 <input type="checkbox"/> 1900 – 1939 <input type="checkbox"/> 1940 – 1985 <input type="checkbox"/> 1986 – 1990	<input type="checkbox"/> 1991 - 2006 <input type="checkbox"/> Post 2006 <input type="checkbox"/> Don't know
How many storeys does the building have?	<input type="checkbox"/> Single storey <input type="checkbox"/> 2 storey <input type="checkbox"/> 3 storey <input type="checkbox"/> 3 + storey	[If more than one] How many of those storeys does the shop occupy? <input type="checkbox"/> 1 storey <input type="checkbox"/> 2 storeys <input type="checkbox"/> 3 storeys <input type="checkbox"/> 3 + storeys

Is the construction (Please select all that apply):	<input type="checkbox"/> Steel frame <input type="checkbox"/> Reinforced concrete frame <input type="checkbox"/> Timber frame <input type="checkbox"/> Solid masonry <input type="checkbox"/> Cavity wall construction <input type="checkbox"/> Other/unsure – please describe <hr/>
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Occupancy

The following questions are about the occupancy of the building:

Is the building owner-occupied or leased?	<input type="checkbox"/> Owner-occupied <input type="checkbox"/> Leased	
(If leased) What is the length of the lease?	months	
(If leased) Is this a full repairing and insurance lease?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know	
Is any part of the retail premises sub let?	<input type="checkbox"/> Yes <input type="checkbox"/> No	[If yes] What net floor area is sub let? sq ft/ m2 Who to? <hr/>
What are the normal operating hours for the shop? (please fill in for each day of the week)	Monday Tuesday Wednesday Thursday Friday Saturday Sunday	
How many hours before the shop opens do staff <i>typically</i> arrive?	(hours)	
	(minutes)	
How many hours after the shop closes	(hours)	

do staff <i>typically</i> leave?	(minutes)
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Energy management

The following questions are about how energy is managed in the shop:

Over a typical year, what proportion of your time is spent on monitoring energy consumption (please select one):	<input type="checkbox"/> Less than 10% <input type="checkbox"/> Between 10 and 24% <input type="checkbox"/> Between 25% and 49% <input type="checkbox"/> Between 50% and 74% <input type="checkbox"/> Between 75% and 100%
Has the business every undertaken an energy review or audit?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Does the business have objectives to reduce energy consumption?	<input type="checkbox"/> Yes – describe <hr style="width: 80%; margin-left: 0;"/> <input type="checkbox"/> No <input type="checkbox"/> Not sure
Does the organisation have: (please tick all that apply)	<input type="checkbox"/> An environmental policy <input type="checkbox"/> Corporate Social Responsibility objectives <input type="checkbox"/> Certification to ISO 14001
Is the business a member of the Carbon Reduction Commitment? (a mandatory scheme aimed at improving energy efficiency and cutting emissions)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure

Section 2 – ENERGY USE & CONSUMPTION – TO BE COMPLETED BY ALL

The following questions are about how energy is used in the shop:

Which of the following do you have in your shop:	<input type="checkbox"/> Space heating – <i>complete section 3A on page 7</i> <input type="checkbox"/> Lighting – <i>complete section 3B on page 10</i> <input type="checkbox"/> Space cooling – <i>complete section 3C on page 12</i> <input type="checkbox"/> Refrigeration (chilled cabinets, freezers or a cold store) – <i>please complete section 3D on page 13</i> <input type="checkbox"/> Hot water – <i>complete section 3E on page 15</i> <input type="checkbox"/> Ovens - <i>complete section 3F on page 17</i> <input type="checkbox"/> Cafe - <i>complete section 3G on page 17</i> <input type="checkbox"/> Dry cleaners – <i>complete section 3H on page 18</i>	
Is there any other equipment that you think uses a lot of energy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

	[If yes] What equipment is this? E.g. air curtains, dishwashers, coffee machine etc.	
What type of energy supplies the building?	<input type="checkbox"/> Electricity <input type="checkbox"/> Gas <input type="checkbox"/> District heating <input type="checkbox"/> District cooling <input type="checkbox"/> Heat from another source e.g. shopping centre boiler <input type="checkbox"/> Cooling from another source e.g. shopping centre cooler	
Do you have a separate meter for your shop for the following energy types?	<input type="checkbox"/> Electricity <input type="checkbox"/> Gas <input type="checkbox"/> District heating <input type="checkbox"/> District cooling <input type="checkbox"/> Heat from another source e.g. shopping centre boiler <input type="checkbox"/> Cooling from another source e.g. shopping centre cooler	
Are any parts of your shop sub metered?	<input type="checkbox"/> Yes <input type="checkbox"/> No	[If yes] Which <i>uses</i> are sub metered? (please select all that apply) <input type="checkbox"/> Space heating <input type="checkbox"/> Refrigeration <input type="checkbox"/> Hot water <input type="checkbox"/> Ovens <input type="checkbox"/> Lighting <input type="checkbox"/> Cafe <input type="checkbox"/> Space cooling <input type="checkbox"/> Dry cleaners
What <i>areas</i> are sub metered?	<input type="checkbox"/> Shop floor <input type="checkbox"/> Storage rooms / warehouse <input type="checkbox"/> Staff room area <input type="checkbox"/> Car park <input type="checkbox"/> Office space	
RESPONSIBILITY FOR CHANGE		
Are you responsible for choosing/proposing changes to: (please select the energy uses you ticked above)	<input type="checkbox"/> Space heating <input type="checkbox"/> Dry cleaners <input type="checkbox"/> Hot water <input type="checkbox"/> Lighting <input type="checkbox"/> Space cooling <input type="checkbox"/> Refrigeration (chilled cabinets, freezers or a cold store) <input type="checkbox"/> Ovens <input type="checkbox"/> Cafe	
MAINTENANCE		
Which equipment do you have a maintenance contract for? (please select all that apply)	<input type="checkbox"/> Space heating <input type="checkbox"/> Hot water <input type="checkbox"/> Lighting	

	<input type="checkbox"/> Space cooling <input type="checkbox"/> Refrigeration (chilled cabinets, freezers or a cold store) <input type="checkbox"/> Ovens <input type="checkbox"/> Cafe <input type="checkbox"/> Dry cleaners
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Energy consumption

The following questions are about energy consumption in the shop:

<p>Please provide details of energy consumption in calendar year 2011. Annual consumption in £ is an alternative to kWh if kWh unknown. If annual consumption provided in £ please provide fuel costs if you are aware of these as well, so we can determine the energy consumption from the £ amount.</p>				
Fuel	Annual consumption	Accuracy of data (select as appropriate)	Annual consumption	Accuracy of data (select as appropriate)
Electricity	kWh	<input type="checkbox"/> Actual <input type="checkbox"/> Estimate	£	<input type="checkbox"/> Actual <input type="checkbox"/> Estimate
Gas	MJ	<input type="checkbox"/> Actual <input type="checkbox"/> Estimate	£	<input type="checkbox"/> Actual <input type="checkbox"/> Estimate
Other	kWh	<input type="checkbox"/> Actual <input type="checkbox"/> Estimate	£	<input type="checkbox"/> Actual <input type="checkbox"/> Estimate
<p>(If annual consumption provided in £ - please provide details of fuel costs):</p>				
Electricity:	£/kWh		Other:	£/kWh
Gas:	£/MJ			

What areas do your fuel bills relate to: (please select all that apply)	<input type="checkbox"/> All areas – whole shop <input type="checkbox"/> Some areas; which: <ul style="list-style-type: none"> <input type="checkbox"/> Shop <input type="checkbox"/> Storage room / warehouse <input type="checkbox"/> Staff room area <input type="checkbox"/> Office space <input type="checkbox"/> Other 	
Do you record your energy use to enable you to look at consumption?	<input type="checkbox"/> Yes <input type="checkbox"/> No	[If yes] How is this done? <input type="checkbox"/> Meter readings <input type="checkbox"/> Bills <input type="checkbox"/> Automatic data capture
Are you responsible for the energy management	<input type="checkbox"/> Yes	

system, if you have one?	<input type="checkbox"/> No
Does the business have the:	<input type="checkbox"/> Training for staff in reducing energy consumption <input type="checkbox"/> Targets for staff in reducing energy consumption

Section 3 – DETAILS OF ENERGY USE

The following questions are about how much energy is used by different equipment in the shop:

3A. SPACE HEATING – PLEASE COMPLETE IF YOU TICKED SPACE HEATING IN SECTION 2	
What fuel is used for space heating?	<input type="checkbox"/> Electricity <input type="checkbox"/> Gas
If you use gas for space heating	
Do you have a boiler?	<input type="checkbox"/> Yes – how many? _____ <input type="checkbox"/> No
For each boiler:	
What is the size of your boiler? kW	Boiler 1 2 3 4
<i>If you don't know size in kW</i>	How old is the boiler (s) in years?
	What is the make and model of the boiler (s)?
	What is the approximate size of the boiler (s)? <i>Height x Width x Depth</i> Please specify m/cm or feet/inches _____
What equipment is used for space heating? (Please select all that apply)	<input type="checkbox"/> Warm air <input type="checkbox"/> Radiators <input type="checkbox"/> Under floor heating <input type="checkbox"/> Other - please describe
Is your heating controlled by:	<input type="checkbox"/> Thermostats <input type="checkbox"/> Timers <input type="checkbox"/> Other – please describe _____
(If thermostat) What temperature is the thermostat set?	C <input type="checkbox"/> Don't know
What time does the heating:	turn on

		turn off
At night is the heating: (please select one option)		<input type="checkbox"/> Turned on – please describe why? <input type="checkbox"/> Turned off
Are the doors to your premises open or closed during operating hours?		<input type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Automatic
Are the doors fitted with air curtains?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the heating in different areas of the shop controlled separately?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Is there gas radiant heating in place?		<input type="checkbox"/> Yes <input type="checkbox"/> No
(If yes) How many heaters do you have?		
(If yes) What is their <i>average</i> size? In kW		
<i>If don't know kW</i>	What is the make and model of heater (s)?	
	What is the approximate age of the heater (s)?	
	What is the approx. size of the heater(s)e.g. length x width x height (<i>please specify metric or imperial</i>)	
If both gas and electricity are used for heating		
(If gas and electricity) Do you use electricity for heating?		<input type="checkbox"/> Yes <input type="checkbox"/> No
(If electricity) Do you have split air conditioning units?		<input type="checkbox"/> Yes – are these: (please select one) <input type="checkbox"/> heating only <input type="checkbox"/> cooling only <input type="checkbox"/> both heating and cooling <input type="checkbox"/> No
How many air conditioning units are there?		

What is their <i>average size</i> ? In kW		
<i>If cannot provide kW</i>	What is the make and model of the air conditioning units?	
	What is the approximate age of the air conditioning unit	
	What is their approximate size? e.g. length x width x height (<i>please specify metric or imperial</i>)	
Do you use portable electric fan heaters?		<input type="checkbox"/> Yes <input type="checkbox"/> No
[If yes] How many?		
What is their average size? In kW		
<i>If cannot provide kW</i>	What is the make and model of the portable electric fan heaters?	
	What is the approximate age of the portable electric fan heaters	
	What is their approximate size? e.g. length x width x height (<i>please specify metric or imperial</i>)	
Do you use electric radiant heaters?		<input type="checkbox"/> Yes <input type="checkbox"/> No
[If yes] How many?		
What is their average size? In kW		
<i>If cannot provide kW</i>	What is the make and model of the electric radiant heaters?	
	What is the approximate age of the electric radiant heaters	
	What is their approximate size? e.g. length x width x	

	height (<i>please specify metric or imperial</i>)	
Over the last three years have you taken action to improve the efficiency of your heating?		<input type="checkbox"/> Action taken <input type="checkbox"/> Action considered <input type="checkbox"/> No action taken
(If yes) What prompted you to take / consider taking that action:		<input type="checkbox"/> Breakdown of equipment <input type="checkbox"/> Planned replacement cycle <input type="checkbox"/> Changes to store layout or shop fitting <input type="checkbox"/> Inadequate service (e.g. too dark in the shop) <input type="checkbox"/> Approached by supplier <input type="checkbox"/> Reduce carbon emissions <input type="checkbox"/> Other – please describe

3B. LIGHTING – PLEASE COMPLETE IF YOU TICKED LIGHTING IN SECTION 2

<p>What types of light bulbs are used in the shop? (Please select all that apply)</p> <p>Can you indicate the proportion of total lighting for each?</p> <p><u>See Glossary of lighting attached to help identify your lights</u></p>	<input type="checkbox"/> Fluorescent strip lighting Number of individual strips _____ Proportion of overall lighting (if known) % _____	<p>If fluorescent strips, what type?</p> <input type="checkbox"/> T12 <input type="checkbox"/> T8 <input type="checkbox"/> T5 <input type="checkbox"/> Don't know
	<input type="checkbox"/> Compact fluorescent lighting Number of individual lights _____ Proportion of overall lighting (if known) % _____	
	<input type="checkbox"/> Halogen down lights or spotlights Number of individual lights _____ Proportion of overall lighting (if known) % _____	
	<input type="checkbox"/> Sodium lighting Number of individual lights _____ Proportion of overall lighting (if known) % _____	
	<input type="checkbox"/> Other, please describe _____ Number of individual strips _____ Proportion of overall lighting (if	

	known) % _____	
(If fluorescent but don't know type) What is their approximate length?	_____	(Please specify cm/inches)
What proportion of your lights on the shop floor are controlled by:	<input type="checkbox"/> Occupancy sensors <input type="checkbox"/> Timers <input type="checkbox"/> Other	
What time do your lights:	come on: _____ go off: _____	
Outside the main shop floor area, are any lights controlled by:	<input type="checkbox"/> Occupancy sensors <input type="checkbox"/> Timers <input type="checkbox"/> Other – please describe _____ <input type="checkbox"/> Not applicable	
(If occupancy sensors) What proportion of the lights outside your main shop floor area are controlled by occupancy sensors?		
(If timers) What proportion of the lights outside your main shop floor area are controlled by timers?		
Over the last three years have you taken action to improve the efficiency of your lighting?	<input type="checkbox"/> Action taken <input type="checkbox"/> Action considered <input type="checkbox"/> No action taken	
(If action taken or considered) What prompted you to take / consider taking that action:	<input type="checkbox"/> Breakdown of equipment <input type="checkbox"/> Planned replacement cycle <input type="checkbox"/> Changes to store layout or shop fitting <input type="checkbox"/> Inadequate service (e.g. too dark in the shop) <input type="checkbox"/> Approached by supplier <input type="checkbox"/> Reduce carbon emissions <input type="checkbox"/> Other – please describe _____	
3C. SPACE COOLING – PLEASE COMPLETE IF YOU TICKED COOLING IN SECTION 2		
What equipment is used for space cooling? (Please select all that apply)		
<input type="checkbox"/> Own central chiller plant <input type="checkbox"/> Split air conditioning units <input type="checkbox"/> Cooling from other central plant		

<input type="checkbox"/> Other – please describe <hr/>	
(If own chiller plant) Is this powered by:	<input type="checkbox"/> Electricity <input type="checkbox"/> Gas
What is the size of the chiller plant? In kW?	
If cannot provide size in kW	What is the make and model of the chiller plant? <hr/>
	What is the age of the chiller plant?
	What is the approximate size of the chiller plant? <i>(length/ width/ height- please specify feet or metres)</i>
Is the cooling in different areas of the shop controlled separately?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the cooling controlled by:	<input type="checkbox"/> Thermostats <input type="checkbox"/> Timers <input type="checkbox"/> Both
What temperature is the thermostat set?	C
What time does the cooling:	turn on turn off
Is the cooling turned on or switched off at night?	<input type="checkbox"/> Turned on – please describe why? <hr/> <input type="checkbox"/> Turned off
Over the last three years have you taken action to improve the efficiency of your cooling?	<input type="checkbox"/> Action taken <input type="checkbox"/> Action considered <input type="checkbox"/> No action taken
(If action taken or considered) What prompted you to take / consider taking that action:	<input type="checkbox"/> Breakdown of equipment <input type="checkbox"/> Planned replacement cycle <input type="checkbox"/> Changes to store layout or shop fitting <input type="checkbox"/> Inadequate service (e.g. too hot in the shop)

		<input type="checkbox"/> Approached by supplier <input type="checkbox"/> Reduce carbon emissions <input type="checkbox"/> Other – please describe <hr/>
3D. REFRIGERATION – PLEASE COMPLETE IF YOU TICKED REFRIGERATION IN SECTION 2		
How many of each type of refrigeration equipment do you have? (Please select all that apply)		
<input type="checkbox"/> Chilled cabinets _____ <input type="checkbox"/> Freezers _____ <input type="checkbox"/> Cold store _____ -		
Do you have a central chiller plant?		<input type="checkbox"/> Yes <input type="checkbox"/> No
What size is the chiller in kW?		
<i>If cannot provide size in kW</i>		What is the make and model of the chiller plant?
	What is the approximate age of the chiller plant?	Years
	What is the approximate size of the chiller?	(length/width/height or litres)
Chilled Cabinets		
How many chilled cabinets do you have?		
What is the average size of cabinet? In kW		
<i>(If cannot provide kW)</i> What is their average volume in litres?		<input type="checkbox"/> 400 <input type="checkbox"/> 600 <input type="checkbox"/> 1200 <input type="checkbox"/> Don't know

What temperature are they set at?	C
What proportion of the shop floor do they cover?	
Do the chilled cabinets have doors?	<input type="checkbox"/> All <input type="checkbox"/> None <input type="checkbox"/> Some
Night blinds?	<input type="checkbox"/> All <input type="checkbox"/> None <input type="checkbox"/> Some
Covers?	<input type="checkbox"/> All <input type="checkbox"/> None <input type="checkbox"/> Some
Freezers	
How many upright freezers do you have?	
What is the average volume of upright freezer? <i>In litres</i>	
What is the average size of upright freezer? <i>In kW</i>	
Do the freezers have doors?	<input type="checkbox"/> All <input type="checkbox"/> None <input type="checkbox"/> Some
Night blinds?	<input type="checkbox"/> All <input type="checkbox"/> None <input type="checkbox"/> Some
Covers?	<input type="checkbox"/> All <input type="checkbox"/> None <input type="checkbox"/> Some
How many chest freezers do you have?	
What is the average volume of chest freezer? <i>In litres</i>	
What is the average size of chest freezer? In <i>kW</i>	
Do the chest freezers have doors?	<input type="checkbox"/> All <input type="checkbox"/> None <input type="checkbox"/> Some
Night blinds?	<input type="checkbox"/> All <input type="checkbox"/> None <input type="checkbox"/> Some
Covers?	<input type="checkbox"/> All <input type="checkbox"/> None <input type="checkbox"/> Some
Cold store	
How big is the cold store? Height in feet	
What is the size of the cold store? In kW	
(If cannot provide kW) Roughly what size is the cold store?	<i>length/ width/ height</i>
Over the last three years have you taken action to improve the efficiency of your refrigeration (chillers, freezers or cold stores)?	<input type="checkbox"/> Action taken <input type="checkbox"/> Action considered <input type="checkbox"/> No action taken
(If action taken or considered) What prompted you to take / consider taking that action:	<input type="checkbox"/> Breakdown of equipment <input type="checkbox"/> Planned replacement cycle <input type="checkbox"/> Changes to store layout or shop fitting <input type="checkbox"/> Inadequate service (e.g. not cooling properly / spoilage) <input type="checkbox"/> Approached by supplier <input type="checkbox"/> Reduce carbon emissions <input type="checkbox"/> Other – please describe _____

3E. HOT WATER – PLEASE COMPLETE IF YOU TICKED HOT WATER IN SECTION 2		
Is the hot water produced by:		<input type="checkbox"/> A central gas boiler or heater <input type="checkbox"/> A central electric immersion heater <input type="checkbox"/> Local electric heaters at the taps <input type="checkbox"/> Local gas heater at the taps
(If central gas boiler or heater) Is this with:		<input type="checkbox"/> Clad storage tanks (i.e. insulated) <input type="checkbox"/> Unclad storage tanks (i.e. not insulated)
What temperature is the water set for each:		central gas boiler or heater central electric immersion heater local electric heaters at the tap local gas heaters at the tap
Over what hours is the water set?		
(If local) How many heaters are there?		
Gas water heaters		
What is the average size of the gas water heater? kW		
<i>If cannot provide in kW</i>	What is the make and model of the gas water heater?	
	What is the approximate age of the gas water heater?	
	What is the approximate size of the gas water heater?	
Immersion heaters		
What is the average size of the immersion heater? kW		
<i>If cannot provide in kW</i>	What is the approximate age of the immersion heater?	
	What is the approximate size if the immersion heater?	
	What is the make and model of the immersion heater?	
Local electric heaters		
What is the average size of the local electric heater? kW		

<i>If cannot provide in kW</i>	What is the approximate age of the local electric heater?	
	What is the approximate size of the local electric heater?	
	What is the make and model of the local electric heater?	
Over the last three years have you taken action to improve the efficiency of your hot water?		<input type="checkbox"/> Action taken <input type="checkbox"/> Action considered <input type="checkbox"/> No action taken
(If action taken or considered) What prompted you to take / consider taking that action:		<input type="checkbox"/> Breakdown of equipment <input type="checkbox"/> Planned replacement cycle <input type="checkbox"/> Changes to store layout or shop fitting <input type="checkbox"/> Inadequate service (e.g. not enough hot water) <input type="checkbox"/> Approached by supplier <input type="checkbox"/> Reduce carbon emissions <input type="checkbox"/> Other – please describe
3F. OVENS – PLEASE COMPLETE IF YOU TICKED OVENS IN SECTION 2		
How many ovens do you have?		
On average, how large are they:		kW volume
<i>(If cannot provide kW)</i> What is the average temperature of the oven (s)?		C
On average, how many shelves do the oven (s) have?		shelves
On average, how many hours per day are the ovens used?		hours / day
3G. CAFE – PLEASE COMPLETE IF YOU TICKED CAFE IN SECTION 2		
How many seats does the cafe have?		
Does it serve:		<input type="checkbox"/> Hot drinks <input type="checkbox"/> Hot meals <input type="checkbox"/> Both
3H. DRY CLEANERS – PLEASE COMPLETE IF YOU TICKED DRY CLEANERS IN SECTION 2		
How many dry cleaning machines do you		

	have?	
What is the average size of the machine?		kg capacity
(If you have ovens, catering equipment or dry cleaning equipment) Over the last three years have you taken action to improve the efficiency of your equipment? (ovens, catering equipment or dry cleaning machines)	<input type="checkbox"/> Action taken <input type="checkbox"/> Action considered <input type="checkbox"/> No action taken	
(If action taken or considered) What prompted you to take / consider taking that action:	<input type="checkbox"/> Breakdown of equipment <input type="checkbox"/> Planned replacement cycle <input type="checkbox"/> Changes to store layout or shop fitting <input type="checkbox"/> Inadequate service (e.g. poor performance) <input type="checkbox"/> Approached by supplier <input type="checkbox"/> Reduce carbon emissions <input type="checkbox"/> Other – please describe _____	

Section 4 - Action to reduce energy consumption

Finally, we would like to know what action you might have taken to reduce energy use in your shop in the last three years:

In the past 3 years have you taken any action to improve: (Tick all that apply)	<input type="checkbox"/> Energy management <input type="checkbox"/> Metering <input type="checkbox"/> Staff training <input type="checkbox"/> Other	[If yes] What have you done? please describe _____
(If yes) What prompted that?	<input type="checkbox"/> Breakdown of equipment <input type="checkbox"/> Planned replacement cycle <input type="checkbox"/> Changes to store layout or shop fitting <input type="checkbox"/> Inadequate service (e.g. poor performance) <input type="checkbox"/> Approached by supplier <input type="checkbox"/> Reduce carbon emissions <input type="checkbox"/> Other – please describe _____	
(If no taken action) What were the	<input type="checkbox"/> Decided not needed	

main reasons for not taking action?	<input type="checkbox"/> Couldn't find suitable equipment to install <input type="checkbox"/> Couldn't raise finance <input type="checkbox"/> Not cost effective <input type="checkbox"/> Not made a decision <input type="checkbox"/> Other – please describe _____
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Thank you for your time; you will receive a short follow-up call within 2-3 working days of us receiving this form to obtain feedback on your experience of completing the survey. Please use the box below to let us know if there are any particularly good times to reach you.

**For postal survey:
Please post completed form in the envelope provided**

1.3 Walk –around visits: Data to collect

- **What is sold**
- **Location of Shop**
- **Identify whether part of a chain (if possible, can be supported by desk research)**
- **Net Floor area of premises.**
 - Can probably only work out shop floor area, but capture notes on any other areas that are visible. For the shop floor, note the shape of the room and count number of strides width x length. Measure length of stride first.
- **Construction of the Building**
 - What can be seen from outside, pillars etc. How old does it look? Compare to other buildings of known age/desk research
- **Type of energy supplied; assume electricity but see if any evidence of gas supply**
- **Heating**
 - Is there heating?
 - What can you see? Fan heaters, radiant heaters, boilers, central heating etc
 - How many

- Dimensions and makes & models
- **Hot water**
 - Can you see any hot water supply? Essentially are any sinks visible
 - Is anything located at the sinks
 - Customer toilet?
- **Lighting**
 - What is used for lighting? Types of bulbs
 - How many of each type; approximate diameter of strips
- **Cooling**
 - Is there cooling? (does it feel like there is cooling in place)
 - What is used for cooling? What is visible; look on outside of premises also
 - How many
 - Dimensions and makes & models
- **Refrigeration on shop floor**
 - Count number of different types of things, try and see what is inside to tell if fridge or freezer
 - Dimensions for one of each type, makes and models
 - Temperatures if easily visible
 - Doors will be visible, blinds may not be. Are the units open or closed
- **Ovens**
 - Are there any ovens visible?
 - Count, dimensions, makes & models
- **Cafe**
 - Number of seats
 - What is sold
- **Any other energy using equipment visible? Eg dry cleaning, lifts**
- **Are other areas apart from the shop floor visible from the shop floor?**
 - For example storage rooms and other areas, visible through open doorways
 - What can be seen? Probably quite rough way to collect data
 - Can any stairs be seen? Suggesting upstairs/downstairs is also attached to the premises directly
- **Any further comments on energy behaviour or store setup?**

2. Findings from the comparison stage and implications for the main stage

The findings of the comparison stage were used to inform the development of the methodology for the main stage. The key findings of the comparison stage, along with our conclusions about implications for the main stage are summarised below:

Overall	
Finding	Conclusions/implications for main stage
The ability of food/mixed retailers to provide the information of interest to DECC varies most significantly according to the number of premises they occupy.	The approach adopted in the main phase to obtain the data/information of interest to DECC should be tailored according to the number of premises occupied by the retailer.
Independent retailers	
Finding	Conclusions/implications for main stage
Independent retailers generally have no system for monitoring energy use; bills are not always filed, but person responsible for energy (generally the owner/partner or store manager) can usually estimate spend. Know and can describe key end uses when prompted to do so, but don't know kW ratings for equipment. Not always possible to identify kW ratings, even during a site audit (not visible, equipment in use or custom built and no plate rating).	It will not be feasible to obtain comprehensive, accurate data on the energy used by independents or kW ratings; however, it is feasible to collect proxy data that will enable DECC to produce estimates of energy consumption and the way in which energy is used within independent food/mixed retailers.
Many independent retailers do not have access to the Internet from their shop; 5 out of the 10 retailers agreeing to participate in the intermediate survey reported that they would not be willing to complete an online survey as they did not have general internet access from their premises. Four of the five that did agree to complete the intermediate survey online said they would need to do this from home as they didn't have a PC in their shop.	An online survey is not particularly effective for obtaining the data of interest to DECC from independent food/mixed retailers.

<p>The telephone survey is effective in obtaining good estimates and/or proxy information from independent food/mixed retailers for the data of interest to DECC, with the following key exceptions:</p> <ul style="list-style-type: none"> • Lighting – respondents are unable to accurately estimate the number of bulbs used in their shop where this number is large • Cooling – respondents were often unable to comment on the make and model of their air conditioning units and many were unable to comment on the age and dimensions of their units <p>In many cases the floor area cited by the respondent was different to that reported by the site auditor. It is possible that this is due to different definitions being adopted for the purpose of the site audit. Some respondents also struggled to provide an accurate description of their buildings' construction</p>	<p>The telephone survey represents the most cost effective means of obtaining the key data of interest to DECC. In instances where precise data are not available, respondents should be able to provide proxy information in most cases that can be used to produce an informed estimate of how energy is used within individual premises. For individual types of equipment, the questionnaire will need to be reviewed with view to capturing alternative types of proxy data in the areas where respondents have struggled (lighting and cooling)</p> <p>Floor area from individual premises is available within NEED and could be used in place of responses where there are discrepancies between the survey and VOA data.</p>
<p>The number of energy end uses and quantity of equipment that the retailer possesses is correlated to the nature of the retail activity at the site</p>	<p>This was expected prior to the comparison stage, but confirmed that we should structure the sample for the main stage based on activity sector, as a purely random sample would result in relatively few interviews with particularly energy intensive business activities.</p>
<p>Large chains (101+ premises)</p>	
<p>Finding</p>	<p>Conclusions/implications for main stage</p>
<p>The head offices of large chains engaged in the comparison stage hold data on energy use centrally, without exception. The largest chains have SMART meters in place and energy use is sub-metered in the largest stores. Inventory information is also held centrally. Detailed data generally captured at head office for premises they own; less information available for premises they lease.</p>	<p>The most cost effective way to obtain data about energy consumption and end use / inventory for the large chains will be to engage the head office.</p>
<p>The degree to which individual premises have control over decision making when they are part of a large chain varies from</p>	<p>Some resource in the main phase will need to be allocated to obtaining information about the behaviour of individual premises</p>

retailer to retailer; however, in all cases some of the data of interest to DECC relating to the behaviour of individual stores is not available at head office level.	within large chains.
No large retailers approached to date have refused to participate; however, they are generally yet to formally agree to participate, citing various steps that would need to be followed before they confirm or decline (including obtaining board level approval, non-disclosure agreements and/or further discussion or reassurance directly from DECC).	Support from DECC in engaging the large retailers will maximise the chance of participation.
Premises belonging to large retailers were more often found to be newer and purpose built for retail than premises used by independent or smaller chain retailers.	Irrespective of head office structure and whether it is possible to collect data from the site, we would expect to see higher accuracy and more comprehensive sets of responses than those used by smaller chains and independents. Relevant individuals are more likely to know more about their building and the equipment in it because equipment is likely to be newer, with schedules for maintenance and replacement, and buildings will have less complex energy set ups.
Medium chains (2-100 sites)	
Finding	Conclusions/implications for main stage
Bills are generally dealt with centrally, even where the chain is small and does not have a separate head office. Data available in some cases relating to inventory, but not always.	Some medium chains will behave like large chains, others will be more like independents. The most cost effective approach for obtaining the data of interest to DECC will vary from retailer to retailer and therefore would need to be determined on a case by case basis.
Some individual sites of medium chains instruct us to contact the head office / main premises before they will speak to us. Head offices often refused to participate as they did not feel the individual sites could spare the time for a survey/audit.	We will need to evaluate in the early interviews with medium chains in the main phase whether the response rate improves when they do not need to commit the time required for an audit to be undertaken.
General findings not related to number of trading premises	
Finding	Conclusions/implications for main

	stage
Premises in primary and secondary locations are older, and not always purpose built for retail. We did not encounter any instances in the interviews conducted where flats and shops shared the same meter; however, it is likely that we will encounter some instances of this in the main phase.	We should continue in the main phase to ask questions to determine whether there are flats above the premises and whether these have a separate meter. However, in general, the ability of the retailers to provide the information of interest to DECC varies more significantly according to the number of premises operated by the retailer, so this does not necessarily need to be included in the sample structure specification.
Premises located in shopping centres have their own electricity meters for the equipment in their shop, but draw on centrally controlled heating and cooling that they are simply billed for as part of a service charge.	We will need to speak to more than one respondent to obtain complete data for premises in shopping centres OR a separate evaluation would need to be undertaken of shopping centres to obtain data relating to centrally controlled heating and cooling.
Additional findings relating to individual survey mechanisms	
Finding	Conclusions/implications for main stage
The telephone survey exceeds 15 minutes in length where the retailer uses energy for four or more end uses.	The telephone survey will be suitable for interviews with independents, but would not be suitable in its current form for use with larger retailers. Obtaining some data centrally from head offices will reduce the number of questions we need to ask at site level. Posting the questions in advance to businesses with many end uses and / or quantity of equipment should reduce the the time the respondent will need to conduct the call.
Respondents were generally willing to describe each item of equipment in their shop in turn when asked to provide an indication of the 'average'. This information was recorded verbatim.	The survey should provide a structured framework for recording proxy data for each item of equipment described by respondents.
The information available in the write-ups from the telephone interviews about overall behaviour were more detailed than the	It is not necessary to visit the site to have a conversation with retailers about their behaviour.

information provided in the site audit write-ups, which concentrated on spending time identifying end use in detail.	
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3. Questionnaires / guides for the main stage

3.1 Revised recruitment script and telephone questionnaire for the main phase

3.1.1 Recruitment script

Database information:

- Building name
- Address (including post code)
- Respondent details:
 - vi. Name
 - vii. Job title
 - viii. Organisation name
 - ix. Telephone number
 - x. Email address

INTRODUCTION: Hello my name is X and I am calling from Databuild an independent research agency.

We are currently carrying out a survey for the Department of Energy and Climate Change (DECC) speaking to retailers who sell food to understand energy use in the retail sector. In particular we want to find out how much energy is being used in different types of premises, what is it used for e.g. heating, lighting etc. and what sort of things are being done to reduce energy use in the retail sector.

(Researcher to reassure the respondent that the work is experimental e.g. we are testing the best approach for collecting the data and therefore we are aware that they might not be able to provide all of the information).

[Ask all]

1. Can I firstly check that you sell food on the premises?
 - Yes – Continue
 - No – CLOSE
2. What proportion of your *floor space* is dedicated to food? [Researcher to capture exact % where known and code into the following bands]
 - a. Less than 10%
 - b. Between 10 and 24%
 - c. Between 25 and 49%
 - d. Between 50 and 74%
 - e. At least 75%, but less than 100%
 - f. 100%

[Close the interview if less than 25% of the floor space is dedicated to food]

[Ask all – to determine quotas]

We are interested in certain types of premises.

3. Can I just check are your premises located in a :
 - g. Town centre – high street (not shopping centre or retail park)
 - h. Secondary location e.g. residential shopping parade
 - i. Retail park
 - j. Shopping centre

4. Thinking about the energy you use in your building. Which of the following do you have: [prompted; multiple choice]
 - a. Space Heating
 - b. Hot water
 - c. Lighting
 - d. Space cooling
 - e. Refrigeration for chilled cabinet, freezers or a cold store
 - f. (where appropriate) Ovens (e.g. for a bakery)
 - g. (where appropriate) Catering equipment for a café or canteen
 - h. (where appropriate) Dry cleaning machines

[If they have four or more ended uses schedule an appointment with the respondent and make them aware we will provide them with a copy of the questions in advance of the telephone conversation]

Possible outcomes:

- Confirm that business is in a quota that is currently unfilled – CONTINUE
- Business is in a quota that is full – CLOSE
- Business has four or more end uses – MAKE AN APPOINTMENT AND OBTAIN ADDRESS / EMAIL ADDRESS - CLOSE

Thank you. Do you have some time to talk to me about this now?

Possible outcomes:

- Yes –
 - Continue
 - No - make an appointment for a convenient time
- Require further information – offer to send e-mail or letter with further information and schedule a time to call back.

Additional information:

- The telephone survey will take a maximum of 20 minutes; it could be shorter
- Responses will remain confidential and under no circumstances will the data for your individual site be reported in the public domain
- (If respondent wants to check validity of work and is not content with e-mail / letter with DECC logo) If you would like to confirm the validity of the work, our contact is Chris Nicholls (Tel: 0300 068 6017)

3.1.2 Survey

[SCREEN QUESTION]

1. We are interested in understanding energy use at <CATI system to automatically enter name and location of site> can I just check are you responsible for energy use at this shop?
 - a. Yes - CONTINUE
 - b. No – I would also like to ask you a few questions about the building you are in and the type of equipment e.g. heating, you have in your shop. Is this something you know about?
 - i. Yes – CONTINUE
 - ii. No – Ask for contact details for alternative contact

[ORGANISATIONAL FACTORS]

2. [Record verbatim – code after fieldwork] I'd like to start by finding out about your role and how energy consumption is managed in the shop. What is your job title?
3. [Years] How long have you been in your position for?
4. [Researcher to confirm response to qu.1] Are you responsible for the energy consumption of the building?
 - c. Yes
 - d. No
5. [If no] Who is responsible for the energy consumption of the building?
6. [If yes] Are you responsible for monitoring energy consumption within the building?
 - a. Yes
 - b. No
7. [If yes] Over a typical year what proportion of your time is spent on monitoring energy consumption?
 - a. Less than 10%
 - b. Between 10 and 24%
 - c. Between 25% and 49%
 - d. Between 50% and 74%
 - e. Between 75% and 100%
8. Has your business ever undertaken an energy review or audit?
 - a. Yes
 - b. No
9. Does the business have objectives to reduce energy consumption or carbon emissions?
 - c. Yes – what are these objectives?
 - d. No
10. [Prompted] Does the organisation have any of the following?
 - a. An environmental policy
 - b. Corporate Social Responsibility objectives
 - c. Certification to ISO 14001
 - d. No

11. [Asked to all] Can I check, is your organisation a member of the Carbon Reduction Commitment? (a mandatory scheme aimed at improving energy efficiency and cutting emissions in private and public organisations)
- Yes
 - No
 - Don't know

[BUILDING FUNCTION]

12. I'd like to find out some information about your shop. What products do you sell?²
13. [Prompted] Is your shop:
- Part of a chain – how many stores are there?
 - A franchise
 - Independent
14. What is the net floor area of the premise? (sq ft/m²) [Researcher to capture units and code whether]:
- Actual
 - Estimate
 - Rough guess

(If unsure provide respondent with an indication e.g. a tennis court is 50 x 95 = 4750 sq ft)

15. Is this all retail space?
- Yes – *skip to Qu.17*
 - No
16. [Prompted - multiple response] What are the other areas in the building used for? Please indicate the proportion of the floor area for each:
- Storage rooms / warehouse
 - Staff room area
 - Office space
 - Other – please specify?
17. Is there a car park?
- Yes
 - No

[OCCUPANCY]

18. Is the building your shop is in owner occupied or leased?
- Owner occupied – *skip to Qu. 21*
 - Leased
19. What is the length of the lease? (Capture in months)
20. Is this a full repairing and insurance lease?
- Yes

² Code frame for this question to be inserted once we have agreed the Thompson codes that fall within the scope of the study.

- d. No – what are your responsibilities as the tenant?
- e. Don't know

[Ask all]

21. Is any part of the retail premises sub let?

- a. Yes:
 - i. What floor area? (sq ft/m2/proportion)
 - ii. Who to?
- b. No

22. What are the opening hours for the shop?

23. How many hours is the shop occupied for during a typical day? (E.g. when do staff members arrive and leave)

[BUILDING DETAILS]

24. [Prompt until correct date is reached] Approximately how old is the building?

- a. Pre 1900
- b. 1900 – 1939
- c. 1940 – 1985
- d. 1986 – 1990
- e. 1991 – 2006
- f. Post 2006
- g. Don't know

25. [Code response] How many storeys does the building have?

- e. Single storey
- f. 2 storeys
- g. 3 storeys
- h. 3+ storeys

26. How many of those storeys does your shop occupy?

27. [Prompted – multiple response] Is the construction of the building: (If unsure researcher to ask the respondent to describe the construction type.)

- a. Steel frame
- b. Reinforced concrete frame
- c. Timber frame
- d. Solid masonry
- e. Cavity wall construction
- f. Other – what?

[PROFILE QUESTIONS]

28. [Prompted – multiple response – linked to qu.4 in the recruitment script] Thinking about the energy you use in your building. Do you have:

- a. Space Heating
- b. Hot water
- c. Lighting
- d. Space cooling

- e. Refrigeration for chilled cabinet, freezers or a cold store
- f. (where appropriate) Ovens (e.g. for a bakery)
- g. (where appropriate) Catering equipment for a café or canteen
- h. (where appropriate) Dry cleaning machines

29. Do you have any other equipment that you think is high using energy equipment? For example:

- Air curtains
- Dishwashers
- Coffee machine³

30. [CATI to recall end uses in a table] Do you have a maintenance contract for <insert end use here>

- a. Yes
- b. No

31. Are you responsible for choosing/proposing changes to <insert end use here> in your shop?

- a. Yes choosing
- b. Yes proposing
- c. No, who is?

[TYPE OF ENERGY USED]

32. [Prompted - multiple response] What type of energy supplies the building?

- a. Electricity - do you have a separate meter for your shop?
- b. Gas - do you have a separate meter for your shop?
- c. District heating - do you have a separate meter for your shop?
- d. District cooling - do you have a separate meter for your shop?

[If in shopping centre]

- e. Heat from another source such as the shopping centre boilers -
Do you have a separate meter for your shop?
- f. Cooling from another source such as the shopping centre chillers -
Do you have a separate meter for your shop?

33. [For each type, if there are non-retail uses of the premises] Does the meter cover your shop alone or are other uses included?

34. Are any parts of your shop sub metered?

- a. Yes
- b. No - *skip to Qu. 37*

35. [Prompted - CATI list to select relevant responses based on Qu.27] Which uses are sub metered?

- a. Space Heating
- b. Hot water
- c. Lighting
- d. Space cooling
- e. Refrigeration for chilled cabinet, freezers or a cold store
- f. Ovens
- g. Café
- h. Dry cleaners

³ Open ended question inserted to capture other end uses; responses to this question will be reviewed when data collection commences.

- i. Tenant retail spaces

36. [CATI system to select areas as relevant] What areas are sub metered?

- g. Shop floor
- h. Storage rooms / warehouse
- i. Staff room area
- j. Car park
- k. Office space

[ENERGY CONSUMPTION]

We would like to understand the energy consumption of the building. In particular we would like to know the annual electricity and / or gas consumption of the building (if you have your fuel bills to hand that would be really helpful).

37. [If supplied by electricity] What is the annual electricity consumption of the premises in kWh?

- a. Answer given
- b. Don't know – *skip to Qu.39*

38. [If answer given] Researcher to record the accuracy of data:

- a. Actual – data taken from an energy bill
- b. Estimate – assumption based on looking at a previous energy bill
- c. Rough guess

39. [If supplied by electric and don't know annual consumption in kWh] What is the annual electricity consumption of the premises in £?

- a. Answer given
- b. Don't know – *skip to Qu.41*

40. [If answer given] Researcher to record the accuracy of data:

- a. Actual – data taken from an energy bill
- b. Estimate – assumption based on looking at a previous energy bill
- c. Rough guess
Skip to Qu.42

41. [If cannot provide annual spend] Do you know what your monthly or quarterly spend is on electricity?

- c. Monthly spend (£)
- d. Quarterly spend (£)

42. [If supplied by gas] What is the annual gas consumption of the building in kWh/therms/m³/ft³ – record units?

- a. Answer given
- b. Don't know – *skip to Qu.44*

43. Researcher to record the accuracy of data:

- a. Actual – data taken from an energy bill
- b. Estimate – assumption based on looking at a previous energy bill
- c. Rough guess

44. [If supplied by gas and don't know annual consumption in kWh] What is the annual gas consumption of the premises in £?

- c. Answer given

- d. Don't know - *skip to Qu.46*
45. Researcher to record the accuracy of data:
- a. Actual – data taken from an energy bill
 - b. Estimate – assumption based on looking at a previous energy bill
 - c. Rough guess
- Skip to Qu.49*
46. [If cannot provide annual spend] Do you know what your monthly or quarterly spend is on gas?
- c. Monthly spend (£)
 - d. Quarterly spend (£)
47. [If supplied by electric and gas and don't know separate consumption] What is the annual electricity and gas consumption of the premises in £?
- c. Answer given – *skip to Qu.49*
 - d. Don't know
48. [If cannot provide annual spend] Do you know what your monthly or quarterly spend is on electricity and gas?
- a. Monthly spend (£)
 - b. Quarterly spend (£)
49. Do your fuel bills relate to your shop alone or are other areas included?
- a. Shop alone
 - b. Other areas
50. Which other areas do they relate to? [CATI software to recall other areas]
51. Do you record information about your energy use in a way that enables you to look at your energy use over time?
- a. Yes
 - b. No
52. [Prompted] Do the data for the system come from:
- a. Meter readings
 - b. Bills
 - c. Automatic data capture
53. [Prompted – CATI to recall end uses] Does the system break down consumption by end use?
- f. Space heating
 - g. Hot water
 - h. Lighting
 - i. Space cooling
 - j. Refrigeration
 - k. Ovens
 - l. Catering
 - m. Dry cleaning
54. [If yes] Are you responsible for operating the energy management system?
- c. Yes
 - d. No – who is [obtain contact information in case we need to speak to them]

55. Does your organisation encourage and support staff in reducing energy consumption?
- c. Yes – what does this involve?
 - a. Training
 - b. Targets
 - d. No
56. Would you agree or disagree that:
- a. You and your staff operate equipment as efficiently as possible most of the time
 - b. Staff are motivated to save energy wherever possible
 - c. Your staff know the right thing to do to minimise energy consumption
 - d. It is easy to persuade staff to behave in an energy efficient way
- [For each] is that agree/disagree strongly or somewhat?
57. Thinking about the past three years, have you considered or taken any action to improve energy management, metering or staff training?
- a. Yes, what have you done/considered
 - b. No – *skip to Qu.60*
58. [Record verbatim and code] What prompted that?
- a. Changes to store layout or shopfitting
 - b. Inadequate service (e.g. new tenant)
 - c. Running costs high
 - d. Approached by supplier
 - e. Reduce carbon emissions
 - f. Other, please specify?
59. Did you take the action
- a. Yes – *skip to Qu.61*
 - b. No, why not
60. What were the main reasons for not taking action (record verbatim and code)?
- a. Decided not needed
 - b. Couldn't find suitable equipment to install
 - c. Couldn't raise finance
 - d. Not cost effective (how assessed?)
 - e. Not made a decision
 - f. Other, please specify?
61. If acted, how did you make that decision:
- a. Payback
 - b. Other return on investment – what?
 - c. Best thing to do – why?
 - d. Recommended – who by

[ENERGY CONSUMPTION BY END USES]

[HEATING]

62. [IF GAS SUPPLY to building] Do you have heating boilers?
- a. Yes – how many?
 - b. No- *skip to Qu.66*

[For each boiler - up to 5]

- Approximate size of the boiler (e.g. length / width / height)
- Age of the boiler
- Make and model of the boiler

[If more than 5 boilers] Researcher to capture description of any other boilers as an open end – size, age, make and model

63. [Prompted] Is the heating system:

- a. Warm air
- b. Radiator
- c. Under floor
- d. Other – please describe

64. [Prompted] Is your heating controlled by:

- c. Thermostats
- d. Timers

65. At what temperature is the thermostat set?

66. What time does the heating:

- a. Turn on
- b. Turn off

67. Is the heating turned on or switched off at night?

- a. Turned on – why?
- b. Switched off

68. Are the doors to your premises open or closed during operating hours?

- a. Closed
- b. Open
- c. Automatic

69. Are the doors fitted with air curtains?

- a. Yes
- b. No

70. Is the heating in different areas of the shop controlled separately?

- a. Yes
- b. No

71. Is there gas radiant heating in place?

- c. Yes
- d. No- *skip to Qu. 77*

72. [If yes] How many heaters do you have?

[For each heater – up to 5]

- What is the approximate size of the heater e.g. length / width / height

- Age of the heater
- Make and model of the heater

[If more than 5 heaters] Researcher to capture description of any other heaters as an open end – size, age, make and model

73. [If gas and electricity] Do you use electricity for heating?
- a. Yes
 - b. No – *skip to section on lighting*

74. [If yes or ELECTRICITY only - prompted]: Do you have split air conditioning units. Are these for:
- e. Heating only
 - f. Cooling only
 - g. Both heating and cooling
 - h. No

75. How many air conditioning units are there?

[For each air conditioning unit– up to 5]

- What is the approximate size of the unit e.g. length / width / height
- Age of the unit
- Make and model of the unit

[If more than 5 units] Researcher to capture description of any other units as an open end – size, age, make and model

76. Do you use portable electric fan heaters?
- b. Yes - how many?

[For each portable electric fan heater– up to 5]

- What is the approximate size of the heater e.g. length / width / height
- Age of the heater
- Make and model of the heater

[If more than 5 fan heaters] Researcher to capture description of any other fan heaters as an open end – size, age, make and model

77. Do you use electric radiant heaters?
- c. Yes - how many?

[For each portable electric radiant heater– up to 5]

- What is the approximate size of the heater e.g. length / width / height
- Age of the heater
- Make and model of the heater

[If more than 5 electric radiant heaters] Researcher to capture description of any other electric heaters as an open end – size, age, make and model

If responsible for choosing/proposing changes to the heating equipment in their shop (as determined earlier in the questionnaire)

78. *Thinking about the last three years*, have you considered or taken any action to improve the efficiency of your heating?
- Yes, what equipment have you replaced/considered replacing?
 - No – why not? *Skip to qu.86*
79. [Record verbatim and code – prompted – multiple response] What prompted that?
- Breakdown
 - Planned replacement cycle
 - Changes to store layout or shopfitting
 - Inadequate service (e.g. too cold in shop)
 - Running costs high
 - Approached by supplier
 - Reduce carbon emissions
 - Other – please specify?

[LIGHTING]

80. [Prompted – multiple response] Thinking about the lights in your shop (not display lighting), which of the following do you have? Please indicate a number/proportion for each:
- Fluorescent strip lighting
 - T12
 - T8
 - T5
 - Don't know
 - Compact Fluorescent Lighting
 - Halogen down lights or spotlights
 - Sodium lighting
 - Other – please specify?

[For each type of lighting they have] Do you know the wattage of the:

- Fluorescent strip lighting
 - T12
 - T8
 - T5
 - Don't know
- Compact Fluorescent Lighting
- Halogen down lights or spotlights
- Sodium lighting

81. [Prompted] Are the lights on your shop floor controlled by:

- Timers
- Other – what?

82. [If timers] What proportion of your lights are controlled by timers? (%)

83. What time do the lights come on and go off?

84. [Where applicable] Outside the main shop floor area, are any lights controlled by
- Occupancy sensors
 - Timers
 - Other – what?
85. [If occupancy sensors] What proportion of your lights are controlled by occupancy sensors (%)
86. [If timers] What proportion of your lights are controlled by timers? (%)

If responsible for choosing/proposing changes to lighting in their shop (as determined earlier in the questionnaire)

87. Thinking about the last three years, have you considered or taken any action to replace equipment or improve the efficiency of your lighting?
- Yes, what equipment have you replaced/considered replacing
 - No – *skip to qu.97*
88. [Record verbatim and code – multiple response]? What prompted that
- Breakdown
 - Planned replacement cycle
 - Changes to store layout or shopfitting
 - Inadequate service (e.g. too dark in shop)
 - Running costs high
 - Approached by supplier
 - Reduce carbon emissions
 - Other – please specify?

[SPACE COOLING]

89. [Prompted – multiple response] Thinking about space cooling do you use:
- Your own central chiller plant
 - Split air conditioning units (see above)
 - Cooling from other central plant (see above)
 - Other – please specify?
90. [If own central chiller plant] Is this powered by:
- Electricity
 - Gas
91. What is the:
- Make and model of the chiller plant
 - Age of the chiller plant
 - Approximate size of the chiller plant (e.g. length / width / height)
92. Is the cooling in different areas of the shop controlled separately?
- Yes
 - No
93. Is the cooling controlled by:

- a. Thermostats
- b. Timers
- c. Both

94. At what temperature is the thermostat set?

95. What time does the cooling:

- a. Turn on
- b. Turn off

96. Is the cooling turned on or switched off at night?

- a. Turned on – why?
- b. Switched off

If responsible for choosing/proposing changes to cooling in their shop (as determined earlier in the questionnaire)

97. Thinking about the last three years, have you considered or taken any action to improve the efficiency of your cooling?

- a. Yes, what equipment have you replaced/considered replacing
- b. No – *skip to qu.108*

98. [Record verbatim and code] What prompted that?

- a. Breakdown
- b. Planned replacement cycle
- c. Changes to store layout or shopfitting
- d. Inadequate service (e.g. too hot in shop)
- e. Running costs high
- f. Approached by supplier
- g. Reduce carbon emissions
- h. Other, please specify?

[REFRIGERATION]

99. [Prompted – multiple response] What refrigeration do you have:

- d. Chilled cabinets
- e. Freezers
- f. Cold store

100. Do you have a central chiller plant?

- c. Yes
- d. No

101. What is the:

- a. Make and model of the chiller
- b. Age of the chiller
- c. Approximate size of the chiller (e.g. length / width / height or litres)

102. [If chilled cabinets] How many chilled cabinets are there?

[For each chilled cabinet– up to 5]

- What is its volume (litres – standard sizes are 400, 600 and 1200)

[If more than 5 chilled cabinets] Researcher to capture description of any other chilled cabinets as an open end – in litres, standard sizes are 400, 600 and 1200

103. What temperature are they set at?
104. [If cannot volume] What proportion of the shop floor do they cover?
105. Do the chilled cabinets have doors?
- d. All
 - e. Some
 - f. None
106. Do you use any blinds or covers on your chilled cabinets at night?
- a. Yes – on all chilled cabinets
 - b. Yes – on some chilled cabinets
 - c. No

[If freezers] Are these:

- a. Upright
- b. Chest

[If upright] How many are there?

[For each upright freezer – up to 5]

- What is its volume (litres)
- What is its age

[If more than 5 upright freezers] Researcher to capture description of any other upright freezers as an open end – in litres

[If chest] How many are there?

[For each chest freezer – up to 5]

- What is its volume (litres)
- What is its age

[If more than 5 chest freezers] Researcher to capture description of any other chest freezers as an open end – in litres

107. Do the freezers have doors?
- d. All
 - e. Some
 - f. None
108. Do you use any blinds or covers on your freezers at night?
- a. Yes – on all freezers

- b. Yes – on some freezers
 - c. No
109. [If a cold store] How big is the cold store? (Capture height in feet)
110. What is the size of the cold store? (capture dimensions)
111. What is the age of the cold store?

If responsible for choosing/proposing changes to refrigeration in their shop (as determined earlier in the questionnaire)

112. Thinking about the three years, have you considered or taken any action to improve the efficiency of your refrigeration (chillers, freezers or cold stores)?
- a. Yes, what equipment have you replaced/considered replacing
 - b. No - *skip to qu.127*
113. [Record verbatim and code] What prompted that?
- a. Breakdown
 - b. Planned replacement cycle
 - c. Changes to store layout or shopfitting
 - d. Inadequate service (e.g. not cooling properly/spoilage)
 - e. Running costs high
 - f. Approached by supplier
 - g. Reduce carbon emissions
 - h. Other, please specify?
114. Did you replace/improve the equipment?
- a. Yes, check proportion of relevant equipment replaced
 - b. No, why not
115. [Record verbatim and code] What were the main reasons for not replacing the equipment?
- a. Decided not needed
 - b. Couldn't find suitable equipment to install
 - c. Couldn't raise finance
 - d. Not cost effective (how assessed?)
 - e. Not made a decision
 - f. Other, please specify?
116. [If replaced] Did you choose an energy efficient alternative?
- a. Yes, how did you make that decision:
 - i. Payback
 - ii. Other return on investment – what?
 - iii. Best product for needs – why?
 - iv. Recommended – who by?
 - b. No
117. [If no – probe and record verbatim] What was the main reason why not?
- a. Energy efficient alternative didn't exist
 - b. Energy efficient alternative not suitable
 - c. Couldn't justify extra cost – why not?
 - d. Couldn't raise finance for extra cost – why not?

- e. Too risky – why?
- f. Not available from preferred supplier – who
- g. Unsuitable e.g. size, aesthetics, noise etc
- h. Other – please specify?

[HOT WATER]

118. [Prompted – multiple response] Is your hot water produced by:
- c. A central gas boiler or heater with
 - i. Clad storage tanks (i.e. insulated)
 - ii. Unclad storage tanks (i.e. not insulated)
 - d. A central electric immersion heater
 - e. Local electric heaters at the taps
 - f. Local gas heater at the taps
119. [For each] At what temperature is the water set?
120. Over what hours is the water heated? (e.g. what time does it come on and go off)
121. [If local] How many heaters are there?

[For each local electric heater] What is the:

- a. Make and model
- b. Age of the equipment
- c. Approximate size of the equipment (e.g. length / width / height)

[For gas water heater] What is the:

- a. Make and model
- b. Age of the equipment
- c. Approximate size of the equipment (e.g. length / width / height)

[For immersion heater] What is the:

- d. Make and model
- e. Age of the equipment
- f. Approximate size of the equipment (e.g. length / width / height)

If responsible for choosing/proposing changes to hot water in their shop (as determined earlier in the questionnaire)

122. Thinking about the three years, have you considered or taken any action to improve the efficiency of your hot water?
- a. Yes, what equipment have you replaced/considered replacing?
 - b. No
123. [Prompted – multiple response] What prompted that?
- a. Breakdown
 - b. Planned replacement cycle
 - c. Changes to store layout or shopfitting
 - d. Inadequate service (e.g. not enough hot water)
 - e. Running costs high
 - f. Approached by supplier
 - g. Reduce carbon emissions

h. Other, please specify?

[IF OVENS – WHERE APPROPRIATE]

124. How many ovens do you have?

[For each oven– up to 5]

- What is the volume of the oven
- How many shelves does the oven have
- What is the age of the oven
- What is the average temperature of the oven
- How many hours per day is the oven in

[If more than 5 ovens] Researcher to capture description of any other ovens as an open end – volume, shelves, age, average temperature, hours each day in use

[If CAFE – WHERE APPROPRIATE]

125. How large is your café? E.g. number of seats)

126. Does it serve?

- c. Hot drinks
- d. Hot meals

[IF DRY CLEANERS – WHERE APPROPRIATE]

127. How many dry cleaning machines do you have?

[For each dry cleaning machine– up to 5]

- What is the average size of the machine (in kg capacity)

[If more than 5 dry cleaning machines] Researcher to capture description of any other dry cleaning machines as an open end – average size of the machines in kg capacity

If responsible for choosing/proposing changes to ovens, catering equipment or dry cleaning machines in their shop (as determined earlier in the questionnaire)

128. Thinking about the last three years, have you considered or taken any action to improve the efficiency of your equipment (ovens, catering equipment or dry cleaning machines)?

- a. Yes, what equipment have you replaced/considered replacing
- b. No – *skip to qu.149*

129. [Record verbatim and code] What prompted that?

- a. Breakdown
- b. Planned replacement cycle
- c. Changes to store layout or shopfitting
- d. Inadequate service (e.g. poor performance)
- e. Running costs high
- f. Approached by supplier

- g. Reduce carbon emissions
- h. Other, please specify?

[ACTION TAKEN AND CONSIDERED]

If any action taken or considered:

- 130. Have you measured the energy/money you have saved?
 - a. How much was it?
 - b. If not, how much had you expected to save?

- 131. Would you agree or disagree that:
 - a. You have sufficient expertise to evaluate energy efficiency opportunities
 - b. There is enough information to enable you to make a decision
 - c. You have the time to investigate alternatives
 - d. It is easy to make the case for investment in energy efficiency
 [For each] is that agree/disagree strongly or somewhat?

[RETURN ON INVESTMENT]

- 132. In terms of return on investment, what is the maximum payback period for energy efficiency projects to be approved (years)?

[OPTIMISING ENERGY EFFICIENCY]

- 133. Do you feel there are any areas in the building where energy efficiency can be improved?
 - a. Yes – which areas of the building is this?
 - b. No

[ARRANGING THE SITE AUDIT]

- 134. Researcher to organise a suitable day & time for the site audit visit.

[CLOSE OF INTERVIEW]

- 135. Thank you very much for your time that's all the questions I have. Is it ok to come back to you if I need to clarify anything about the conversation with you?
 - c. Yes
 - d. No

- 136. As part of our quality procedures a research manager may be in contact with you to verify some of you responses, is this ok?
 - c. Yes
 - d. No

- 137. Finally, would you like to take Databuild's number or the Market Research Society Free phone number to confirm this is a genuine market research study?
 - e. Databuild – 0121 687 1144
 - f. MRS number – 0500 396 999
 - g. No
 - h. Both

3.2 Main stage: Summary provided in advance of interview to premises with three or more end uses

A. BUILDING DETAILS – These will be asked to all

- What is the net floor area of the premise? (square feet/square metres) *If unknown, approximate wall lengths will allow us to make an estimate.*
- Approximately how old is the building?
- What is the construction of the building?
 - Steel frame
 - Reinforced concrete frame
 - Timber frame
 - Solid masonry
 - Cavity wall construction
 - Other – what? Describe how it looks.

B. ENERGY USES AT THE SITE – THESE WILL ONLY BE ASKED FOR THE USES YOU HAVE.

1. HEATING – These questions will only be asked if you have heating

- What do you use for heating? E.g. Central heating, underfloor heating, air conditioning units that also provide heat, freestanding radiators, heat from a shopping centre or district network, fan heaters.
- What are the makes and models of the equipment you use for heating?
- How old are the items you use for heating?
- What are the approximate dimensions of the items you use for heating? (length x width x height). What do they look like?
- How is your heating controlled?
 - Switched on as needed – what times of day, for how long?
 - By thermostats – what temperature are they set at?
 - By timers – what time does the heating turn on and switch off?

2. LIGHTING – These questions will only be asked if you have lighting

- What proportion of different types of lights do you have in the shop?
 - Fluorescent strip lighting
 - Compact Fluorescent Lighting (energy saving bulbs)
 - Halogen down lights or spotlights
 - Sodium lighting
 - Other – please specify?
- Do you know the wattage of the bulbs?
- How are your lights controlled:

- Switched on and off as needed
- On timers – what time do they come on and off?

3. COOLING (Space cooling – not refrigeration) – These questions will only be asked if you use equipment to cool the premises

- What do you use to cool the premises? E.g. Air conditioning units, fans, cooling from a central chiller plant or shopping centre/district scheme.
- For your cooling equipment, what are the:
 - Make and model
 - Age
 - Approximate size of the chiller plant (e.g. length x width x height)
- How is your cooling controlled?
 - Thermostats – what temperature is it set?
 - Timers – what time does heating come on and go off?
 - Switched on and off as needed – when is it used?

4. REFRIGERATION – These questions will only be asked if you have fridges and other chilled cabinets (e.g. display), freezers or cold stores

- What refrigeration do you have? E.g. fridges and other chilled cabinets, freezers, cold stores, central chiller plant
- For your fridges, chilled cabinets and freezers:
 - What is the make and model
 - How old is the equipment
 - What is the volume of the equipment? If unknown, what are its dimensions/what does it look like?
 - What temperature are they set at?
 - Do the items have doors, if not do you use covers or blinds when the store is not open?
- If you have a cold store, how big is the cold store? (height x width x length)
 - How old is it?
 - What temperature does it run at?

5. HOT WATER – These questions will only be asked if you use hot water

- What do you use to produce hot water?
 - A central gas boiler or heater – does it have clad or unclad storage tanks?
 - A central electric immersion heater
 - Electric heaters at the taps
 - Gas heater at the taps
- At what temperature is the water set?
- Over what hours is your water heated – or is it just heated as you use it?
- How many heaters or boilers are there? What are their:
 - Make and model
 - Age

- Approximate size of the equipment – length x width x height

6. OVENS – These questions will only be asked if you use ovens at the premises

- How many ovens do you have?
- For each oven:
 - What is the volume of the oven, or if unknown what are the dimensions?
 - How many shelves does the oven have?
 - What is the age of the oven?
 - What do you usually set the temperature to?
 - How many hours per day is the oven being used?

7. CAFE – These questions will only be asked if you have a cafe area on your premises

- How large is your café? E.g. number of seats
- What does it serve?
 - Hot drinks
 - Hot meals

8. DRY CLEANERS – These questions will only be asked if you have any dry cleaning machines on the premises

- How many dry cleaning machines do you have?
- What is the average size of the machine (in kg capacity)? If unknown, what are its dimensions, make/model and age?

For the types of energy using equipment above that you do have, if you are the person responsible for choosing new equipment and/or proposing changes to equipment, we will ask:

- In the past three years, have you considered or taken any action to replace equipment or improve the efficiency of it?
 - Why/why not?
 - What actions did you consider or take?

4. Approach adopted in calculating a bottom-up estimate of energy consumption

The bottom-up energy consumption is calculated based on the equipment reported by respondents during interview. A methodology for the bottom-up calculation was developed for each type of equipment based on the data captured during the interview process and factors to derive energy consumption available within the public domain. Overall, the methods employed fall broadly into the following groups:

- I. Equipment where a demand per square metre of floor space is available allowing an estimate of overall demand to be calculated and used to derive energy consumption
- II. Equipment where the number of items and operating hours can be drawn from the dataset and a standard kW rating can be applied for the purpose of estimating energy consumption per annum
- III. Equipment where the number of items can be drawn from the dataset but energy consumption requires some further information/assumptions other than the number of items e.g. equipment size or energy supply.

A list of equipment and the method through which the bottom-up estimate was derived is outlined in the table below. For each equipment type the estimate was calculated for each sector individually. The broad method utilised is indicated by colour coding where (i) is green, (ii) is blue and (iii) is purple:

Equipment	Details	Specific limitations
Lighting (including compact fluorescent, fluorescent strip lighting, halogen lighting, sodium lighting and incandescent lighting)	<p>Lighting demand is defined in terms visible light required per m² (lumens/m²). Consumption is therefore derived as follows:</p> <ol style="list-style-type: none"> 1. Demand is applied to the total floor area for the sector and the median number of hours lighting is operated. 2. Overall demand is split between the differing lighting types based on the average proportion of lighting each type comprised e.g. if on average 80% of lighting is fluorescent strip, 80% of the demand is allocated to this lighting type. 3. Demand is divided by the lumens per watt for each lighting type 	<p>-An estimate based on raw numbers of lights may produced a more accurate estimate of energy use; however during data collection respondents were not able to provide this information and the proportion within each lighting type was used instead.</p> <p>- The lumen demand is currently considered equal for all sectors within this study. However, certain activities may in reality require differing visible light levels e.g. a newsagent may not require as much lighting as a butchers where more complex handling of food products is performed.</p> <p>-Lumens produced per watt for differing lighting types is based</p>

		on a mid-point from a range of possible values. A more accurate estimate could be obtained with sales weighted average of the lumens produced per watt for different bulbs sold within the UK.
Chilled cabinets (with doors)	<p>An estimate of energy consumption is calculated for chilled cabinets with doors based on internal refrigeration volume. The process for estimating this is:</p> <ol style="list-style-type: none"> 1. Respondents were asked for the total number of chilled cabinets and whether all, some or none of them had doors. Where some had doors the total quantity of chilled cabinets was split equally between the quantity with and without doors. 2. An average volume is calculated based on chilled cabinet external dimensions as reported by respondents which have at least one cabinet with doors. 3. An adjustment factor (0.6) is applied to the average overall volume to estimate average internal volume. 4. The average volume is multiplied by the MTP factor and then by the number of items to get overall energy consumption. 	<p>- The raw number of chilled cabinets with doors and without doors is an estimate based on respondents reporting all, some or none. Where respondents have reported that some have doors the exact number may differ from the 50:50 split employed for this analysis. It follows that although the volumes calculated reflect respondents that have reported having cabinets with doors, the individual cabinets used to calculate the average may include display cabinets because the average includes dimensions given from respondents that have reported having some with and some without doors.</p> <p>- The factors applied to estimate the internal refrigeration volume or display area are derived from basic desk research of a limited number of refrigeration units on sale. Further secondary research could be carried out to validate this adjustment factor and increase estimate accuracy.</p> <p>- The factor to calculate energy consumption for chilled cabinets and freezers assumes 24/7 operation; this may not always be accurate in particular for chilled cabinets without doors, however operational hours for refrigeration were not captured during the interview process.</p>
Chilled cabinets (without doors/display)	<p>An estimate of energy consumption is calculated for chilled cabinets without doors based on display area. The process for estimation is as follows:</p> <ol style="list-style-type: none"> 1. As above 2. An average display area is calculated based on the greatest two chilled cabinet dimensions given by respondents which have reported having at least one cabinet without doors. 3. An adjustment factor (0.6) is applied to the display area to estimate the area cooled from the external area. 4. The average display area is multiplied by the MTP factor and then by the number of items to get overall energy consumption. 	
Upright freezers	As described for chilled cabinets with doors	
Chest freezers	As described for chilled cabinets with doors, with the exception that the adjustment factor to derive an internal volume is 0.8.	
Cold stores (chiller rooms)	The total number of items derived from the respondent interviews is multiplied by a kW rating factor and then by estimated operation hours. For cold stores the estimate operation hours assumes 8,760 hours/year (i.e. 24/7 operation).	-The factor applied assumes all cold stores have an area less than 20m ³ . Although the data was examined to ensure this was sensible there will be some chiller rooms and cold stores that

		exceed this volume.
Chiller plants (for both refrigeration and for cooling)	The number of items is multiplied by the factor for chiller plants. The factor is based on an estimate for a year's use.	-This is based on a package chiller plant and we made the assumption that retailers of this size are unlikely to have large process chiller plants, however there is a possibility that some businesses were referring to these larger types of equipment.
Boilers	The total number of items derived from the respondent interviews is multiplied by a kW rating factor and by the median average hours of operation as reported by respondents.	- Conversion factors are often based on an example from the data and not on an average reflecting the non-domestic stock of equipment. This largely due to lack of data in the public domain. This estimates may therefore result in an under or over estimation of energy use. -A number of respondents reported that heating was only used 'as needed'. Qualitative evidence was gathered to enable an estimate of 'as needed' to be included in generating median operational time however it may not always be accurate. Further research could be conducted to validate this assumption.
Electric radiators		
Portable fan heaters		
Gas heaters		
Air conditioning (split unit - heating)		
Air conditioning (split unit - cooling)	Demand from air conditioning is calculated from the average kW used per metre squared of space. Consumption is therefore derived as follows:	- The factor for air conditioning demand is derived from a publication primary referring to offices, it may therefore differ/be higher in the food and mixed retail sector where a large quantity of equipment which produced heat is operated. -A number of respondents reported that cooling was only used 'as needed'. Qualitative evidence was gathered to enable an estimate of 'as needed' to be included in generating median operational time however it may not always be accurate. Further research could be conducted to validate this assumption.
Room air conditioning	<ol style="list-style-type: none"> 1. Demand is applied to the total floor area of businesses reporting air-conditioning use for cooling. 2. This demand for the floor area cooled is then multiplied by the median average operation hours for cooling systems. 3. Where respondents reported room air conditioning the same process was applied by the sample was de-duplicated with those reporting air-conditioning systems in an earlier section to avoid double counting. 	
Boilers	The total number of items derived from interviews is multiplied by a kW rating factor and by the median average hours of operation as reported by respondents.	-The average operational hours is derived from respondents which reported they had the specific type of equipment and were able to provide the time hot water was switched on and off. For boilers and oil boilers respondents were grouped together to derive a median figure for operation hours for all respondents with hot water boilers and were not assessed
Immersion		
Oil Boilers		

		individually due to sample size. For immersion heaters the operational hours is based on respondents which have immersion systems, however in some cases they may also have had other methods of hot water heating and the hours reported may not purely reflect the immersion system.
Taps Heaters Multi-point	The total number of items derived from the respondent interviews is multiplied by a kW rating factor and by an estimate of operational hours. Although, operation hours for hot water systems as a whole, respondents from businesses utilising tap heaters and multi-point systems often reported use 'as needed' and were unable to quantify this. The following process was therefore employed to estimate operational hours: 1. The average number of employees within each sector was derived from Experian data. 2. It was assumed each employee would use hot water for approximately 2 minutes per day the business was open. 3. The median average number of days open per year was derived for each sector from survey data. 4. The factors outlined in 1, 2 and 3 were multiplied by one another to get estimate annual operation hours.	- The number of employees is based on an Experian average and not on actual numbers reported by respondents as this was not a question included within the survey. Additionally, it is unlikely that all employees will be working on each day open and this may therefore result in an over-estimation of use. -The assumption of time used per day is an estimate from qualitative evidence gathered during data collection but could benefit from secondary research for validation.
Ovens (including standard, deck and rotisserie ovens with electric, gas or unknown supply)	The total number of items derived from interviews is multiplied by a kW rating factor and by the median average hours of operation as reported by respondents.	-The sample size for oven operation hours is relatively small. -Oven type and supply was not a variable originally intended for data-collection. Classification was therefore obtained from additional information provided by respondents. Where type was not provided ovens were assumed to standard. Where supply was not provided respondents were first categorised into based on their premises energy supply e.g. those with electric only were assumed to have electric ovens. Where supply was still ambiguous, ovens were classified as unknown supply and average factor applied.
Coffee machine	The total number of respondents which reported having a cafe is derived from interviews and multiplied by a kW rating factor for coffee machines and by the median opening hours for businesses with	-Coffee machines are assumed to be on for the duration of annual opening hours -Some respondents which did

	cafes.	not report having cafe may still have take away coffee machines on premises. These respondents are not included in the estimate of energy consumption.
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URN 13D/142e