



Department for  
Business, Energy  
& Industrial Strategy

# COLLECTING ENERGY EFFICIENCY DATA IN THE UK

Approaches using administrative data and surveys –  
some of the challenges and opportunities

Julian Prime

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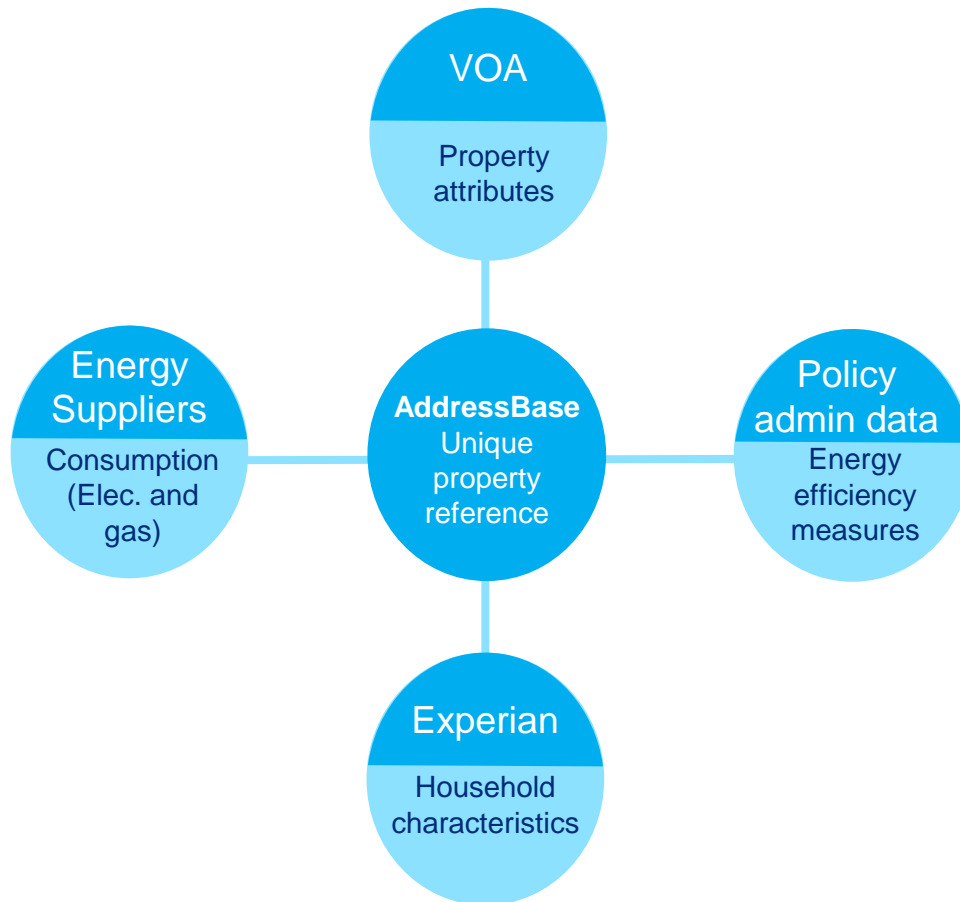
# Household energy efficiency data

## “Bottom-up” administrative data

- Annual gas and electricity consumption at household level
  - From energy company billing system – data sharing agreement
- Data on energy efficiency policy delivery at household level
  - From policy administrator – data sharing agreement
- Property characteristics (rooms, wall type, area)
  - From property tax records – data sharing agreement
- Modelled data on occupants
  - Commercially available data - £ \$ € ¥



# Household energy efficiency analysis



- NEED is a bottom-up approach for combining data from existing admin data sources
- Provides insights into how energy is used
- Impact of installing energy efficiency measures on energy consumption



# Challenges along the way

## Practical issues:

- Legal framework
- Getting data providers on board!
- Ensuring data sharing agreements are watertight!

## Technical issues:

- Large database issues: data imports sometimes fail; run time can be slow.



# Challenges along the way.....continued

## Data issues:

- Energy consumption – to measure the impact - based on meter readings, many of which are estimated.
- Measure installation is binary: there is no record of the percentage of a house covered with insulation.
- Missing data – eg no record of DIY installations of measures.
- Data accuracy – modelling of some data sources.
- Address matching can be difficult for some types of property - eg apartment blocks.



# Opportunities

- Development of supplier obligations: estimates of savings from insulation measures inform estimates of energy and carbon savings delivered through policies.
- Fuel poverty analysis: consumption by income and tenure to inform policy and understand the extent of under-heating.
- Inform development of other policies: heat; RHI, FITs, future policies etc.
- Understanding behavioural aspects of the housing market.
- More accurate understanding of the impact of policies on Carbon Budgets, including likely rebound effects.



# Non-domestic buildings energy efficiency

## Research Aim:

- Update the evidence base for energy use and abatement in Non-Domestic buildings across England and Wales.
- Needed because non-domestic buildings use around one-quarter of energy consumption and produce around one-eighth of end-use GHG emissions

## Research Questions:

- Update understanding of how energy is used (for different end uses in each building type and in aggregate), for a snap-shot in time.
- Update understanding of how energy use can be abated.
- Understand the barriers and facilitators of energy abatement.



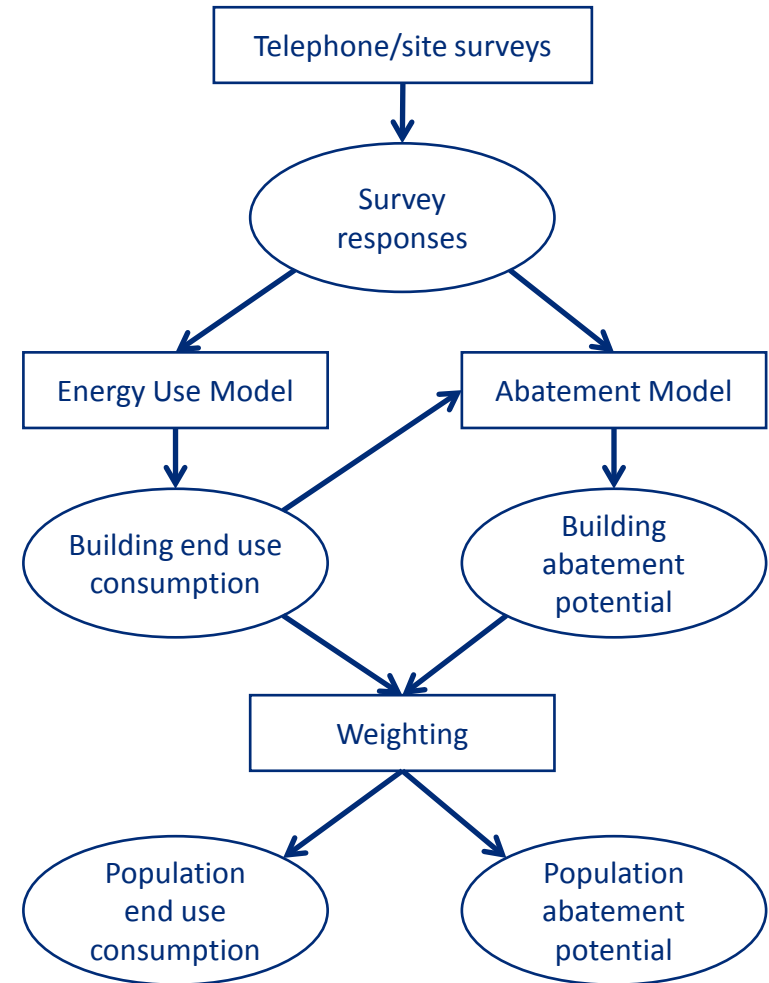
# Methodology

## Problem:

- Expensive and time consuming to measure the end use energy consumption of a building (let alone several thousand).

## BEES approach:

- Informed by pilot study into different methodology options.
- Use a telephone survey to remotely gather key information about a building and its occupants.
- Use a relatively simple calculation methodology to convert the telephone survey responses into energy end use consumption.
- Weight and aggregate the buildings in the BEES sample up to the population.
- Repeat for every sub-sector.







# Surveys

## 3,690 telephone surveys

- 20-25 minutes in length.
- Aimed at Energy/Facilities managers.
- Collects basic data on building, equipment, usage & energy management.
- 'Core' questions and 'Sector Specific' questions tailored to building type.

## 214 site surveys

- Recruited from telephone survey respondents.
- 0.5-1.5 days depending on building type and complexity.
- Validates data and collects more detailed building energy data.
- Helps calibrate subsector specific parameters in energy use model.
- 1 hour qualitative interview on barriers to and drivers of energy efficiency.



# Challenges along the way

## Resource intensive

- Challenging research that has taken much longer than hoped.
- Diversity of non-domestic stock requires a heavily tailored approach.

## Securing response

- Resource intensive/complex data collection:
  - 50 surveys; Non-standard approaches to data collection; Maximising response; and Respondent appetite/burden on organisations.
- Sub-sectors dropped e.g. banks, post offices; and sub-sectors not achieved e.g. data centres.
- Some quotas not reached.

## Project handling (and resource intensive - on both sides).

- Contractor skills (consultancy and market research organisation) & sub-contractor relationship.



# Challenges along the way.....continued

## Complex data processing

- Models for each sub-sector.
- Data validation and QA discoveries.
- Weighting complexity and sub-contractor skills (e.g. moving sub-sectors).

## Reporting issues

- Making expectations clear, agreeing report outline specifications early; adherence to DECC style, templates etc.

## Data and documentation production

- Agreeing an early specification on requirements, and scrutinising interim data.

**High cost** to conduct research of this nature, and changing costs (price increase).



# Opportunities

- Understand better how to target policies to different customers and how they might react to various policy levers
  - **For example:** the role of energy managers, the relative merits of targeting owner occupiers vs private rented sector
- Understand better the impact of policy proposals
  - **For example:** better understanding of what measures might be used to improve energy efficiency in particular segments eg rented sector, SMES...
- Start to understand how various policy levers might interact
  - **For example:** How Buildings level policy levers such as building regulations overlap with organisational level policies such as reporting



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**Thank you for your attention!**

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national-energy-efficiency-data-need-  
framework](https://www.gov.uk/government/collections/national-energy-efficiency-data-need-framework)

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