RICARDO

Ricardo
Energy & Environment

Using council data to deliver social and economic benefits for citizens

EDIS has been developed with Innovate UK funding by Ricardo Energy & Environment in partnership with Coventry and Oxford City Councils. EDIS has demonstrated that data on properties and occupants can be brought together and analysed cost-effectively to deliver a range of social and economic benefits for citizens.
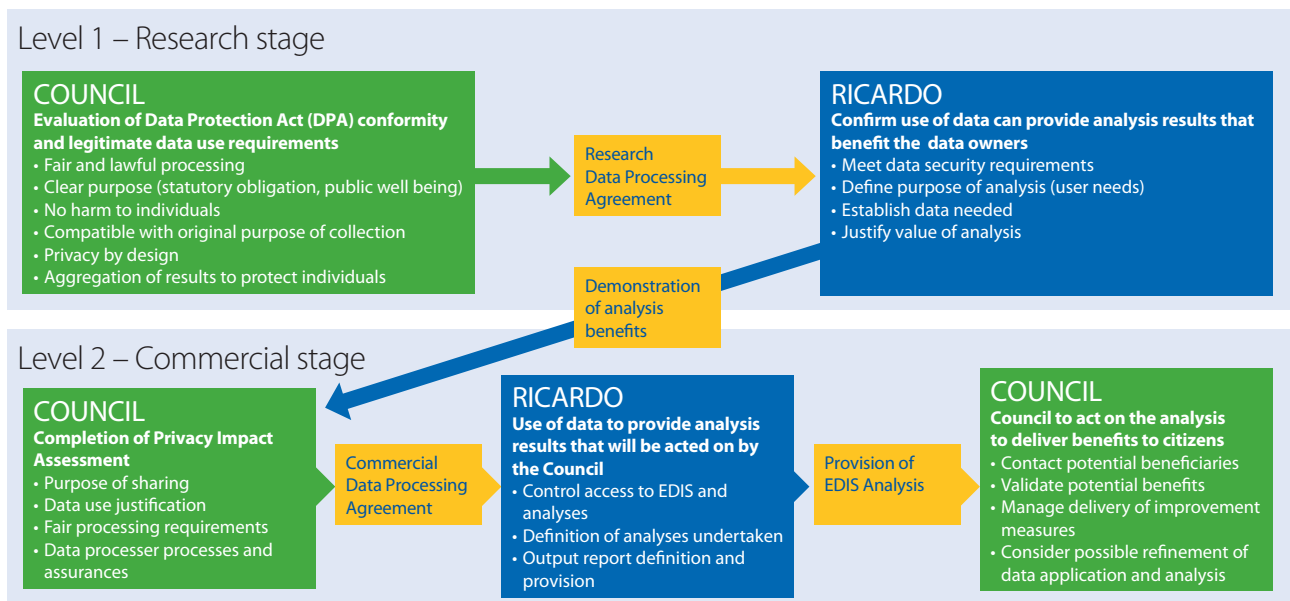
A key application of EDIS is to identify properties that are priorities for energy efficiency measures under the third round of the Energy Company Obligation (ECO3). However there are many other applications of EDIS such as identifying vulnerable citizens where poor building energy performance may be impacting their health and care needs.

Enabling the use of council data

A crucial achievement of EDIS has been to develop a route map to data processing agreements that can be tailored to the specific needs of councils and the data they have available. These allow the use of council data in accordance with the Data Protection Act to:
- Provide energy efficiency advice.
- Alleviate fuel poverty.
- Target the use of ECO funding.

What is EDIS?

The Energy Data Integration System (EDIS) is a data platform for power and heat usage that enables community trends and individual usage patterns of domestic and commercial buildings to be identified. Please visit the EDIS website (www.edis-ricardo.com) to find out more.

Data processing model

Level 1 – Research stage

COUNCIL
Evaluation of Data Protection Act (DPA) conformity and legitimate data use requirements
- Fair and lawful processing
- Clear purpose (statutory obligation, public well being)
- No harm to individuals
- Compatible with original purpose of collection
- Privacy by design
- Aggregation of results to protect individuals

Research Data Processing Agreement

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Confirm use of data can provide analysis results that benefit the data owners
- Meet data security requirements
- Define purpose of analysis (user needs)
- Establish data needed
- Justify value of analysis

Demonstration of analysis benefits

Level 2 – Commercial stage

COUNCIL
Completion of Privacy Impact Assessment
- Purpose of sharing
- Data use justification
- Fair processing requirements
- Data processer processes and assurances

Commercial Data Processing Agreement

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Use of data to provide analysis results that will be acted on by the Council
- Control access to EDIS and analyses
- Definition of analyses undertaken
- Output report definition and provision

Provision of EDIS Analysis

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Council to act on the analysis to deliver benefits to citizens
- Contact potential beneficiaries
- Validate potential benefits
- Manage delivery of improvement measures
- Consider possible refinement of data application and analysis

Data analysis

Until now, energy demand models such as the Standard Assessment Procedure (SAP) for domestic properties and the Simplified Building Energy Model (SBEM) for commercial buildings have been used as the main ways of identifying opportunities for energy efficiency intervention. Over the years, these models have become very complex, involving more and more parameters, but they can still show poor correlation with measured energy use because they do not account for the variable influence of occupancy on energy consumption.

EDIS has developed a radical new diagnosis-based analysis approach, which uses various parameters contributing to energy consumption including building structure, occupancy and activities, to provide a description or 'energy signature' of a property's energy demand profile. Properties with a similar energy signature can be grouped together as being suitable for a particular intervention. EDIS does this by flexibly filtering data against many parameters to segment properties producing intervention shortlists. The example below shows a basic EDIS filter dashboard for properties with poor Energy Performance Certificates (EPCs) (Band E or lower).

EDIS does not involve modelling and can be simply and flexibly tailored to unlock the full value of data. It becomes more refined and accurate as more data become available and can easily segment complex mixtures of properties to identify intervention opportunities without the need for costly large-scale surveys.
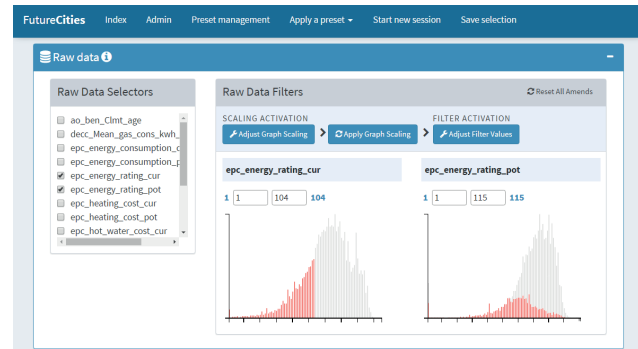
Grey: Distributions for properties in Coventry
Red: Residual distributions for properties with a poor EPC.

Analysis results

EDIS provides a powerful way of understanding and interrogating multi-variant datasets using a filter dashboard to bring together any of the data fields available across the council datasets. The data display can be scaled to focus on ranges of interest and instantly shows how well correlated the data fields are.

The filters can be selected to identify targets for a particular intervention. For instance, priority properties for ECO support may be those:
• In EPC band F and G.
• Showing as cold (potentially under heated) when photographed by an aerial thermal camera.
• Where the occupant is on disability benefit (and is likely to have been at home when the aerial photography was done).

Applying this filtering to Coventry City Council's data, 62 properties scattered across the city have been identified (as shown on the map). These properties would have been very difficult and costly to identify without EDIS.
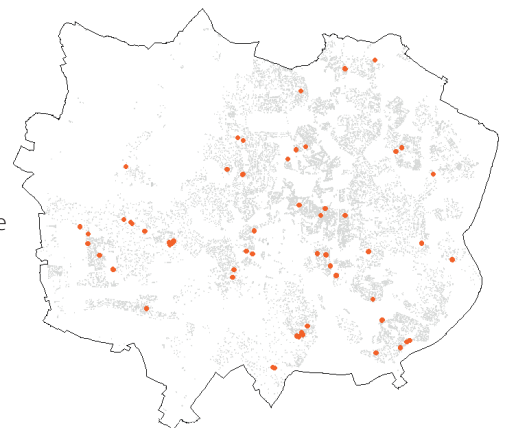
ECO3 Application

EDIS is now being used by Oxford and Coventry City Councils to identify priority targets under ECO3 Flexible Eligibility criteria. The Councils are working in partnership with E.ON and

a data processing agreement has been drawn up between E.ON and Ricardo so actual energy consumption data can be included in the analysis. To overcome issues around commercial confidentiality, the capacity of EDIS to analyse different data sources in isolation is being exploited with only the outcomes being combined in a way that complies with the needs of the data controllers.

EDIS is currently generating shortlists of properties that are most likely to be amenable to ECO support both generally and under the Flexibility Eligibility. These shortlists include indicative deemed scores for the different energy efficiency measures that could be installed. They will be followed up by the Councils and E.ON will provide ECO support for the improvements made.

The contribution from EDIS will not end here. By entering updated data into EDIS, the impact of the improvement made can be monitored and the outcomes used to identify the next set of priority targets.