ENERGY END-USES IN NEW ZEALAND'S NON-RESIDENTIAL BUILDINGS

Andrew POLLARD 1
Lynda AMITRANO 1
Lee BINT 1

1. BRANZ Ltd

The Building Energy End-use Study (BEES) was a 7-year project investigating energy and water use in non-residential (predominantly office and retail) buildings in New Zealand. This was the first time a comprehensive nationwide study focussing on these areas had been undertaken in New Zealand.

Premises were randomly selected and included a variety of sizes and activity types, from small corner dairies to large corporate offices. Likewise the buildings these premises were within were of various construction forms, sizes and age. The data collected within the study was multi-faceted and multi-disciplinary: a telephone survey was undertaken which collected energy revenue and building data simultaneously. More than one-hundred of these premises were monitored at an appliance, end-use and premise level.

One key finding was the need to classify the premises by activity type beyond simply office and retail, in order to make sense of the monitored results. This included classifications such as food-retail and general-retail, among others.

For premises with office activities the energy was generally split into thirds: lighting, space conditioning and plug loads - which partially confirmed previous New Zealand research from the 1980s on energy use in office buildings.

It was also found that lighting electricity was particularly important for general-retail activities. Lighting electricity ranged between 10% and 55% of total premise electricity, and varied considerably in the combinations of lamp types encountered. Very similar findings were also identified for the heating and cooling systems.

The electricity attributed to commercial refrigeration was also of great significance. Commercial refrigeration was predominantly found in food-retail premises, such as supermarkets, and was 40% of the total premise electricity monitored, on average.

These results provide key baseline information for New Zealand's non-residential buildings into the future and enable businesses to identify where they are best to focus efforts for reducing energy use.

Andrew Pollard: andrew.pollard@branz.co.nz

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