

HEEP – Supporting the energy market

Making informed decisions

New Zealand has 1.4 million homes and every year we build on average 22,000 more. All these homes use energy in various forms and for a wide range of end uses, yet our understanding of household energy consumption patterns is limited.

If energy suppliers and legislators are to manage supply, transmission/distribution, energy efficiency, fuel switching and climate change issues effectively, it is increasingly important to fill this knowledge gap.

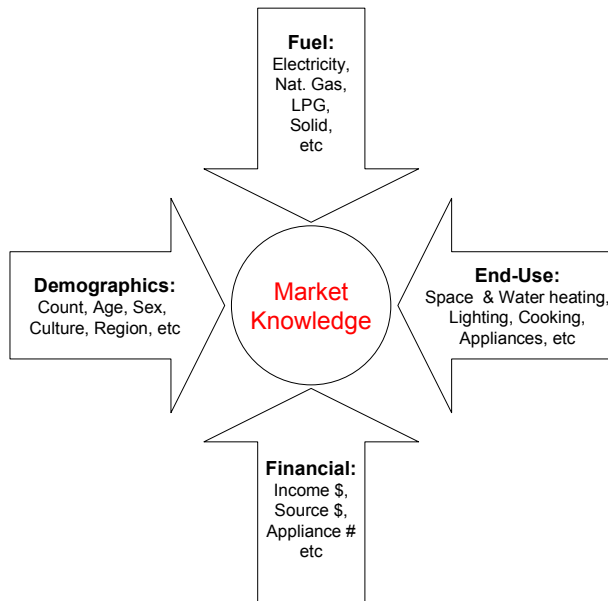


Figure 1: HEEP – market knowledge

Developed and run by the Building Research Association of NZ (BRANZ), HEEP (Household Energy End-Use Project) provides answers to a myriad of important questions about domestic energy use.

Using HEEP you can, for the first time, segment the domestic energy market into clearly defined and very specific sector groupings.

Using HEEP's unique profiling abilities, you can study the various energy use patterns of these sectors and understand how different types of households use energy, when, in what kind of appliances and with what kind of fuel, and under what circumstances/conditions. HEEP also shows how different household construction materials and methods influence energy consumption

HEEP is the only analysis tool available in New Zealand to provide such a detailed breakdown of the domestic energy use market.

Benefits to you

HEEP identifies the actual, as opposed to theoretical, energy use habits of a wide range of household demographics, and demonstrates how each demographic behaves under certain consumption circumstances.

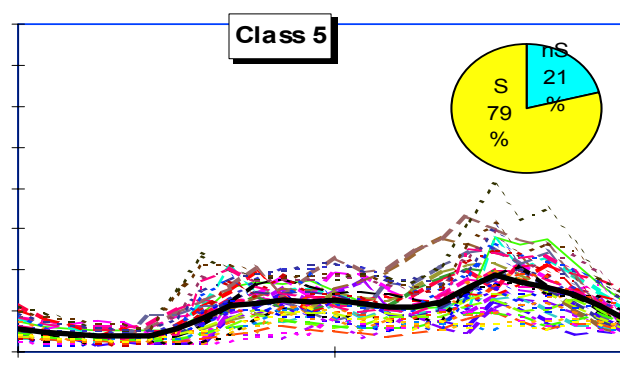


Figure 2: 'Time-of-use profiles'

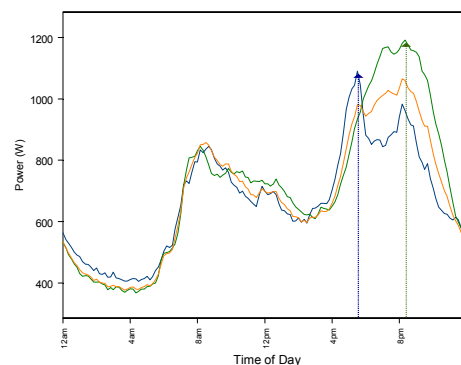


Figure 3: User class - peak times

HEEP enables **generators** and **retailers** to better understand and predict customer behaviours and usage profiles which, in turn, allows you to maximise value from specific customer types and influence supply strategies, including:

- Identifying and quantifying growth and new product opportunities.
- Minimising costs and improving service by influencing usage to shift load to more profitable time-of-use periods.
- Reducing your exposure to potential "polluter-pays" charges associated with New Zealand's compliance with the Kyoto Protocol.

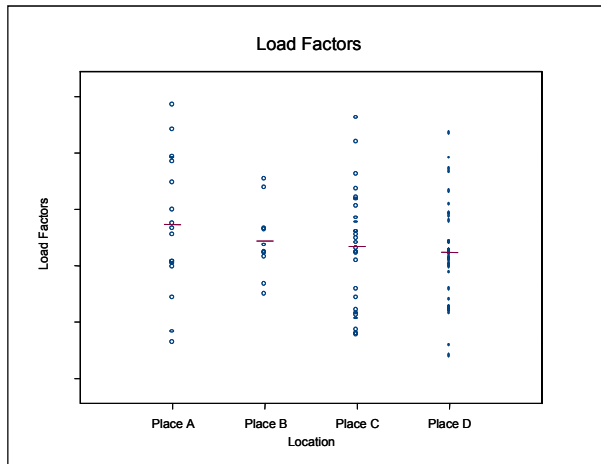


Figure 4: Load Factors by Location

HEEP provides **lines companies** with regionalised micro and macro market behavioural patterns/trends that allow you to:

- Manage your existing network more effectively.
- Plan to minimise the occurrence of stranded or under-utilised assets.
- Better manage existing constraints.
- Plan investment decisions based on accurate load predictions.

HEEP provides similar market intelligence to **suppliers of other domestic fuels**, permitting you to:

- Understand regional and socio-demographic usage patterns in more detail.
- Accurately quantify product advantages versus competitors' offerings.
- Predict demand curves and respond early to emerging fuel use trends.
- Identify potential cross-selling or market gap opportunities.

For **appliance manufacturers** and **suppliers**, HEEP can:

- Provide unique information on what appliances are used in New Zealand households and patterns of use.
- Assist you to identify different levels of service expected by various types of customers (and help you ensure your product features meet actual household needs) and perhaps the future tariff structures of energy retailers.

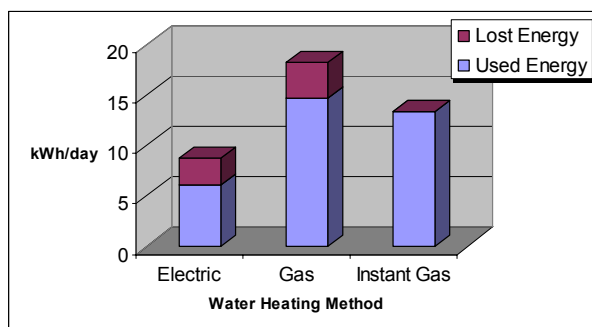


Figure 5: Water Heating by Fuel Type

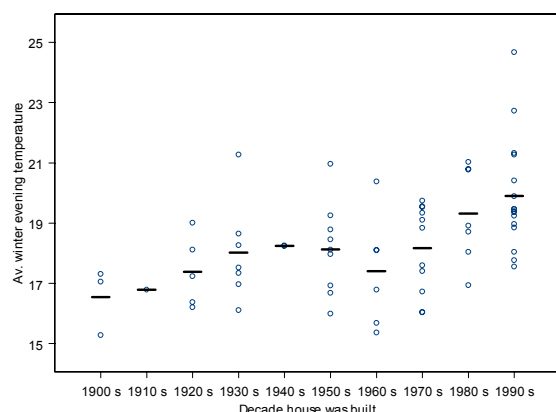


Figure 6: Temperature by house age

HEEP provides **energy market analysts** with a detailed picture of New Zealanders' domestic energy use habits. This information is a vital component in the design of any regional/national strategies and policies designed to influence market behaviour.

Why HEEP is important

Few organisations would make commercial, strategic or policy decisions based on old or inaccurate market knowledge.

Yet the most recent detailed research on New Zealand's domestic energy use is the 1971/72 household electricity survey. Dated as it now is, that research still forms the basis of much of New Zealand's residential energy end-use analysis.

This lack of current energy end-use data has also meant that many activities, including the Government's Residential Grants energy efficiency programme, are based on 30 year old theoretical modelling rather than on modern behavioural data from real households.

Fresh market intelligence

There have been massive changes in New Zealand society, and energy use trends, in the 30 years since the household electricity survey. HEEP tells it how it is, not how it was.

There have been changes in fuels (including the wide availability of natural gas), new types of appliances (such as LPG heaters), new appliance classes (for example microwave ovens), new Building Code requirements (NZBC Clause H1: Energy Efficiency) and new construction systems (for example polystyrene cladding).

There have been significant societal changes (ethnic diversity, regional drift, etc), consumer spending ('convenience foods') and increases in new home size and changes in construction processes.

Up to now there have been many unanswered questions, too – how warm are New Zealand houses, and has this changed over 30 years? How often are these 'new' appliances used, and what is their impact on peak power or energy use? Do insulated houses use more or less space heating energy?

HEEP tells you everything your business needs to know about current domestic energy use trends and issues. It wires you directly in to what is actually happening in the market, it provides analysis in user-friendly and easy-to-manipulate formats, and it is the only analysis tool in New Zealand to provide this service.

A comprehensive approach to data gathering

HEEP research covers three key analysis fields:

- Fuel use patterns (all fuels – electricity, natural gas, LPG, solid fuels, solar, etc).
- Energy end-use data (includes 'real time' analysis of how energy is used in the household - appliances, space conditioning, water heating, lighting, etc).
- Occupant profiling (number, income, socio-demographic details, etc).

Data is gathered from randomly selected homes that represent the general New Zealand housing stock. Properties are selected using Statistics NZ mesh blocks.

Purpose-designed equipment is installed in each house for a year. All major appliances are monitored together with a selection of other appliances. Data is gathered at 10 minute intervals (two minutes in some cases) to provide a totally comprehensive picture. The data is then collected monthly as part of a rigorous quality assurance programme.

The HEEP research team has over 60 years of combined experience in this field of work and BRANZ itself has carried out other similar projects for over 30 years.



Figure 7: HEEP monitoring

HEEP products

HEEP services can be structured to analyse market behaviours by the following broad energy use breakdowns:

- Householder type (number of occupants, tenure, income, income source(s), total income, fuel types, ethnicity, education, etc).
- Property type (building material, house type, age, construction, region, etc).
- Region.
- Seasonal.
- Time of day blocks.
- Appliance brands/types.
- Household applications (water, space heating etc).
- Type of fuels use - what types of household use which fuels for what applications.
- Special purpose surveys on request.

In addition, HEEP can provide various degrees of analysis and interpretation, depending on user requirements.

Currently, HEEP data represents 50% of the country, including all main centres. A complete analysis of all New Zealand households will be available at the end of 2004.

Accessing HEEP Results

The results from HEEP analysis are readily available to full financial partners. They have access to published reports before they are released to the general market, direct access to the HEEP research team, and the ability to discuss their specific needs and how the monitoring programme can best meet their needs.

HEEP analysis is also available to other interested groups. Please contact us, and we will work with you to define your question and how HEEP analysis can best assist you.

Results and analysis are available as tabulation, graphic presentation or descriptive text through e-mail, fax, hardcopy or on disk.

Where next?

HEEP analysis is already used by the Energy Efficiency and Conservation Authority, Fisher & Paykel, WEL Energy Trust and Transpower, among many others.

How can HEEP help you?

For further information, please contact:
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