

Statistical Standard for Energy Types used in Private Dwellings

Rationale

Information on the types of energy consumed in occupied New Zealand private dwellings is used for marketing research and to monitor changes, over time, in the energy types used by New Zealand households. It is an indicator of the habitability of houses, when used in conjunction with information on dampness and insulation levels and is an important variable in deriving the deprivation index.

The information may also be combined with other variables to help forecast and plan energy requirements and distribution, enable natural resource accounting, and monitor trends in energy efficiency and conservation.

Definition

The definition 'Energy types used in private dwellings' enables data about energy usage for space heating, water heating and cooking to be collected in occupied private dwellings.

Operational issues

The Statistical Standard for Energy Types used in Private Dwellings refers to energy types or sources in their initial state, which are externally supplied or accessed. For example, where an energy source is used to power an electric generator (which provides the dwelling with electricity for heating, cooking, etc), it is the initial energy source (petrol/diesel) used to power that generator, that should be recorded as the energy type used.

Explanatory notes

Changes to the standard

- Energy Type has replaced Fuel Type in the previous standard (1998) since technically, solar energy (which is included in the standard) is not a fuel type. Energy type is a term that more accurately reflects the rationale for this standard, which is to provide information on the types of energy consumed in occupied New Zealand private dwellings.
- The 1998 standard included the Household Economic Survey (HES), however the HES has been removed from the scope of the 2009 standard. The HES measures the amount of money spent on energy by households, which is a different concept from measuring the different types of energy used – the rationale for this new standard.

Classification changes

The classification has changed from a flat classification to a hierarchical one which allows:

- the introduction of more detail to reflect new technology (eg pellet fires)
- further definition of the types of bottled and mains gases used, to reflect user requirements.

Level 1 of the classification is the same as level 1 of the previous standard classification, except that wood and coal have been expanded to include wood products and coal products. However the population census may use wood and coal as alternative labels.

Level 2 has been added to enable the collection of data on the use of new technology.

Classification criteria

The criteria used to classify Energy Types Used in Private Dwellings, is the energy type(s) (in their initial state) that are used :

- to heat space in a private dwelling
- for cooking in a private dwelling
- for water heating in a private dwelling.

Classification

ENERGYTYPE V1.0 - Energy Types Used in Private Dwellings - Standard Classification

Classification	Energy Types Used in Private Dwellings - Standard Classification
Abbreviation	ENERGYTYPE
Version	V1.0
Effective date	April 09

Energy Types Used in Private Dwellings is an hierarchical classification with 2 levels. It has nine categories at the highest level and 26 categories at the second level – excluding residual categories.

Energy Types Used in Private Dwellings

- 01 Electricity**
 - 010 Electricity nfd
 - 011 Electricity from the national grid
 - 012 Electricity generated on site
- 02 Mains gas (piped or reticulated from street)**
 - 020 Mains gas (piped or reticulated from street) nfd
 - 021 Mains natural gas (North Island)
 - 022 Mains LPG (North and South Island)
- 03 Bottled gas**
 - 030 Bottled gas nfd
 - 031 Small bottled LPG (9kg or less) filled at a retail outlet
 - 032 Large bottled LPG (over 9kg - delivered by contractor/wholesaler)
 - 039 Bottled gas nec
- 04 Wood and wood products**
 - 040 Wood and wood products nfd
 - 041 Firewood
 - 042 Pellets
 - 049 Wood products nec
- 05 Coal and coal products**
 - 050 Coal and coal products nfd
 - 051 Coal
 - 059 Coal products nec
- 06 Liquid fuels**
 - 060 Liquid fuels nfd
 - 061 Home heating oil (diesel)
 - 062 Petrol
 - 069 Liquid fuels nec
- 07 Solar energy**
 - 070 Solar energy nfd
 - 071 Solar heating
 - 079 Solar energy nec
- 08 No energy used**
 - 081 No energy used
- 09 Domestic energy types nec**
 - 091 Domestic energy types nec
- 44 Don't know**
 - 444 Don't know
- 55 Refused to answer**
 - 555 Refused to answer
- 77 Response unidentifiable**
 - 777 Response unidentifiable
- 88 Response outside scope**
 - 888 Response outside scope
- 99 Not stated**
 - 999 Not stated

The residual categories 'Don't Know', 'Refused to Answer', 'Response Unidentifiable', 'Response Outside Scope' and 'Not Stated' are defined under the heading 'Glossary and references'.

'Not Further Defined' codes are included for responses containing insufficient detail to be classified at level 2, but which can still be classified to a less detailed level 1 category.

'Not elsewhere classified (nec)' codes are included for responses that do not warrant their own separate classification categories. Such responses are usually infrequent or unanticipated.

Examples:

Bottled gas nec could include small canisters of gas (of the type mainly used for cooking when camping, but may be used in a dwelling), **liquid fuels nec** could include kerosene or white spirits, **coal products nec** could include coke or briquettes and **wood products nec** could include charcoal or compressed sawdust logs.

Note:

Home heating oil, in the past, was diesel with up to 10% kerosene added to prevent the diesel solidifying at low temperatures. However, due to the recent changes to the New Zealand diesel fuel specifications (reduction in sulphur content to a maximum of 50 mg/kg), fuel suppliers can no longer supply diesel fuel for use in diesel engines or home heating that is dosed with kerosene.

Coding process

Respondents are asked to tick as many boxes as they need to show the energy types used in the dwelling. No priority is given to any one response.

Questionnaire module

Requirements

The questionnaire module(s) is required to:

- elicit responses on the energy type(s) in their initial state that are supplied or accessed, for example, if a petrol generator is used to produce electricity, the initial energy type is 'petrol'
- elicit responses based on the fuel type(s) used **within** a private occupied dwelling
- be suitable for a self-completion, telephone or personal interview survey (the responding unit could be the occupier, reference person or an interviewer)
- state in the guide notes and/or instructions that the sun coming through the window to heat the house, which does not have any equipment or specially designed walls and/or flooring for storing and distributing the heat, does not qualify as 'solar heating'
- state in the guide notes and or instructions that 'water heating' refers to the energy type used to heat the hot water cylinder in order to provide hot water to a sink, shower or bath.

The questionnaire module(s) may:

- elicit responses on the possession of items or appliances that are used for heating, and/or cooking and/or water heating, which allows energy type(s) to be derived
- elicit responses based on the energy type(s) used to heat the dwelling, and/or to cook in the dwelling, and/or to heat water in the dwelling.

Minimum and maximum sets

There is a range of possible questions that may be asked to obtain the output variables. The maximum set requires questions to be asked on the energy types used in a private dwelling for cooking, space heating and water heating or the possession of items or appliances that are used in a private dwelling for space heating, cooking and water heating. The minimum set requires that only one question is asked on the types(s) of energies used in a private dwelling or the possession of items or appliances used for cooking or space heating or water heating.

Example

Question modules for this standard are yet to be designed and cognitively tested by population census. When new modules are designed they will be inserted into the standard.

The questionnaire modules below are examples from the 1998 standard for Fuel Types Used in Dwellings that meet the requirements documented in this statistical standard. Other questionnaire modules may vary in format but should conform to the requirements contained in this statistical standard. Classifications and standards policy allows for flexibility in conforming to all the questionnaire requirements in any particular statistical standard, and the following are examples to be used as guides.

13 Tick as many circles as you need to show which of the following are ever used to **heat** this dwelling.

- never use any form of heating in this dwelling
- electricity
- mains gas
- bottled gas
- wood
- coal
- solar heating system
- other fuel(s) → Print fuel(s)

14 Tick as many circles as you need to show which of the following are ever used for **cooking** inside this dwelling.

- no cooking ever done inside this dwelling
- electricity
- mains gas
- bottled gas
- other fuel(s) → Print fuel(s)

If a microwave or other electric appliance is also used for cooking, also tick electricity

Note:

Do not include the energy type(s) you use to cook in the barbecue if it is only used outside.

15 Tick as many circles as you need to show which of the following are used in this dwelling for **water-heating**.

- no water-heating ever done in this dwelling
- electricity
- mains gas
- bottled gas
- wood
- solar heating
- other fuel(s) → Print fuel(s)

If you heat water with a wet-back, show the fuel(s) used

Notes:

If you sometimes heat water using an electric kettle or a kettle on the fire, stove or burner, do NOT include that as water heating.

This question refers to the energy types your household uses to heat a water cylinder, or to provide instant hot water for a sink or shower/bath.

If you use a fire with a wetback, such as a chip heater, wood burner or pellet fire to heat water, tick or show all the energy types (for instance, wood, coke etc) that you use in the burner.

Standard output

Energy types used in dwellings

The standard output variable categories are the same as the classification categories. The residual categories may be output separately or combined. Where a combination item of residuals is to be used in output, this item should be labelled 'not elsewhere included' and should have a footnote indicating its composition. The residual categories are defined in the glossary.

Outputs may be a combination of any of the energy types used – for example 'electricity and bottled gas used for cooking in this dwelling' (2 energy types) and 'coal and wood and electricity used to heat this dwelling' (3 energy types).

The number of energy type combinations used may include:

- No energy types used for heating, cooking and/or water heating
- 1 energy type used for heating, cooking and/or water heating
- 2 energy types (any combination) used for heating, cooking and/or water heating
- 3 energy types (any combination) used for heating, cooking and/or water heating
- 4 or more energy types (any combination) used for heating, cooking and/or water heating.

The census output classification V1.0 CEN.NUMHTFUEL06 – Census 2006 Number of Heating Fuels Used Classification, has been used to output the number of fuels used to heat a dwelling.

- 00 No heating fuels used
- 01 One fuel
- 02 Two fuels
- 03 Three fuels
- 04 Four fuels
- 05 Five fuels
- 06 Six fuels
- 07 Seven or more fuels
- 77 Response unidentifiable
- 99 Not stated

There is no standard classification for output of the 'Number of Energy Types Used'. Any new census classification should incorporate the new standard terms, for example:

Number of Heating Energy Types Used

- 00 No heating energy types used
- 01 One energy type
- 02 Two energy types
- 03 Three energy types
- 04 Four energy types
- 05 Five energy types
- 06 Six energy types
- 07 Seven or more energy types
- 77 Response unidentifiable
- 99 Not stated

Number of Energy Types Used to Heat this Dwelling

- 00 No heating ever used in this dwelling
- 01 1 type of energy used for heating in this dwelling
- 02 2 types of energy used for heating in this dwelling
- 03 3 types of energy used for heating in this dwelling
- 04 4 types of energy used for heating in this dwelling
- 05 5 types of energy used for heating in this dwelling
- 06 6 types of energy used for heating in this dwelling
- 07 7 or more types of energy used for heating in this dwelling
- 77 Response unidentifiable
- 99 Not stated

Number of Energy Types Used for Cooking in this Dwelling

- 00 No cooking ever done in this dwelling
- 01 1 type of energy used for cooking in this dwelling
- 02 2 types of energy used for cooking in this dwelling
- 03 3 types of energy used for cooking in this dwelling
- 04 4 types of energy used for cooking in this dwelling
- 05 5 types of energy used for cooking in this dwelling
- 06 6 types of energy used for cooking in this dwelling
- 07 7 or more types of energy used for cooking in this dwelling
- 77 Response unidentifiable
- 99 Not stated

Number of Energy Types Used to Heat Water in this Dwelling

- 00 No water heating ever in this dwelling
- 01 1 type of energy used to heat water in this dwelling
- 02 2 types of energy used to heat water in this dwelling
- 03 3 types of energy used to heat water in this dwelling
- 04 4 types of energy used to heat water in this dwelling
- 05 5 types of energy used to heat water in this dwelling
- 06 6 types of energy used to heat water in this dwelling
- 07 7 or more types of energy used to heat water in this dwelling
- 77 Response unidentifiable
- 99 Not stated

A combined list of all energy types used in the dwelling is available by derivation. Derivation methodology may vary from survey to survey.

The Classifications and Standards team may be contacted for more information on output requirements.

Related classifications and standards

New Zealand

This standard classification is not linked to any other Statistics New Zealand standard classification. This standard is not used by any other part of the Official Statistical System in New Zealand.

International

This standard is not based on any international standard or the standard of any other country.

Glossary

Biodiesel

Biodiesel can be produced from any vegetable oil or animal fat and used as a substitute or partial substitute for mineral diesel. To produce biodiesel, these fats or oils are chemically converted to esters that have properties similar to mineral diesel. Biodiesel is often blended with mineral diesel and blends of up to 5 percent in mineral diesel are suitable for use in diesel engines without modification.

Bioethanol

Bioethanol is an alcohol made from sugar, starch and products containing sugars and starches, through a process of fermentation and distilling, and used as a substitute or partial substitute for petrol. Bioethanol has properties that are similar to petrol so it is often blended with petrol.

Biofuel

Biofuel is a generic term for fuels that can be produced from or are made up of a renewable material of plant or animal origin. Often they are substitutes or partial substitutes for fossil or mineral fuels. Biofuels used in transport are typically bioethanol which is used as a petrol substitute and biodiesel which is used as a diesel substitute. These are the biofuels that are most likely to be used in New Zealand in the medium term. Biofuels have the major advantage of not contributing to overall greenhouse gas emissions.

Biogas

A combustible gas derived from decomposing biological waste. Biogas normally consists of 50 to 60 percent methane, plus carbon dioxide, and hydrogen sulfide

Bottled gas

Gas provided in a bottle or canister. This may be a large bottle or canister which is located near the house, which a contractor or wholesaler may remove and replace with new ones, a smaller bottle that is filled at a retail outlet, or canisters mainly used with camping and/or outdoor equipment.

Briquettes

A block of compressed coal dust, charcoal or sawdust and wood chips used for coal and kindling.

Coal

A hard black or brown rock comprised of mainly carbonised plant matter, that is burnt to provide heat.

Coal products

Any product made from coal and used for heating. Such as briquettes or coke.

Coke

The solid residue of impure carbon obtained from bituminous coal and other carbonaceous materials after removal of volatile material by destructive distillation. It is used as a domestic fuel and in the making of steel.

Compressed natural gas – CNG

A gas (mostly methane) used as a fuel, which is formed naturally in the earth when organic material decomposes under pressure and compressed to allow it to be stored and used for heating. Not readily available in New Zealand except in a few North Island service stations (for motor vehicle use only).

Diesel (petroleum diesel)

Petroleum diesel, also called petrodiesel or fossil diesel is produced from petroleum and is a hydrocarbon mixture, obtained in the fractional distillation of crude oil between 200°Celsius and 350°Celsius at atmospheric pressure.

Dwelling

A dwelling means any building or structure, or part thereof, that is used (or intended to be used) for the purpose of human habitation. It can be of a permanent or temporary nature and includes structures such as houses, motels, hotels, prisons, motor homes, huts and tents. There can be more than one dwelling within a building, such as an apartment building where each separate apartment or unit is considered a dwelling.

Electricity

Electric power may be supplied by a central utility company to a residence via underground or above ground power lines or may be generated on site by solar panels, wind turbines, generators or other means, for the exclusive use of a residence.

Energy

A measure of being able to do work. There are many forms of energy, such as heat, mechanical, electrical, radiant, chemical and nuclear energies. The energy type for this standard is heat energy.

Energy source

The source of the energy, eg wood/coal burnt to obtain heat (and light).

Firewood

Wood intended to be burned for heat.

Fuel

Specifically, fuels is used to denote any solid or liquid material (eg coal, wood, oil, or gas, that is used as a source of heat or power).

Home heating oil

Home heating oil is diesel. In the past up to 10 percent kerosene was added to the diesel to prevent 'waxing' (solidifying) in very cold temperatures, however, due to the recent changes to the New Zealand diesel fuel specifications (reduction in sulphur content to a maximum of 50 mg/kg), fuel suppliers can no longer supply diesel fuel for use in diesel engines or home heating that is dosed with kerosene.

Mains gas

Gas connected to the dwelling by underground pipes and provided on a continuous basis (never runs out). This includes new subdivisions where gas is reticulated from a central gas supply.

Natural gas

Natural gas consists mainly of methane. The large proportion of methane is one of the reasons natural gas has such a good safety record. Methane is lighter than air and will disperse more easily if there is a gas leak.

Passive solar heating

Specifically designed heating systems that are built into a dwelling, designed to capture the sun's heat during the day and to release it at night. This can include specifically built heat soak walls and other structures.

Pellets

Wood pellets are a densified wood fuel typically made of shavings and/or sawdust. The sawdust or shavings are processed through an extruder to develop a uniform 1cm long pellet with diameter of 6mm. The pellets are bagged for residential use or trucked bulk for larger scale consumers.

Petroleum gas – LPG

Liquefied Petroleum Gas (LPG) is the generic name for mixtures of hydrocarbons (mainly propane and butane) in a liquid state. LPG is colourless, odourless and heavier than air. A chemical is added to give it a distinctive and unpleasant smell, sometimes described as rotten cabbage, so that even a very small leak can be easily detected. LPG burns readily in air and is an excellent fuel for heating, cooking and for automotive use.

Private dwelling

A private dwelling accommodates a person or a group of people. It is not generally available for public use. The main purpose of a private dwelling is as a place of habitation, and it is usually built (or converted) to function as a self contained housing unit.

Retail outlet

Store selling merchandise and/or services directly to the public in unlimited quantities.

Solar energy

Solar concentrators accurately oriented towards the sun directly convert the sun's radiation into electrical energy by an array of photoelectric cells or solar cells.

Solar heating

A means by which solar energy is used as a source of heat. Solar energy may be translated directly via slate tiles or walls specifically designed to store heat, or may be accessed via some form of solar heating system. Excluded are windows or other non-specifically designed means of utilising solar energy.

Solar heating system

Specifically designed heating systems that rely on a solar energy source. Solar heating systems may be used to heat space or to heat water.

Wood

Any wooden material that may be burnt to provide heat.

Wood products

Any product made from wood and used for heating. Examples include pellets (defined elsewhere), charcoal and compressed sawdust logs.

Residual categories

Don't know

Use of this category is discretionary. The use of a category capturing 'don't know' responses is most applicable to household surveys where don't know may be a legitimate response to certain questions.

Not elsewhere classified (nec)

This is a residual category used for responses for which no appropriate category exists. Such responses are usually infrequent or unanticipated.

Not further defined (nfd)

This is used in hierarchical classifications for responses containing insufficient detail to be classified to the most detailed level of the classification, but which can be classified to a less detailed category further up the hierarchy.

Refused to answer

This category is **only** used when it is known that the respondent has purposefully chosen not to respond to the question. Use of this residual category in processing is optional. Its use is most applicable in face-to-face or telephone interviews, but may be used in self-completed questionnaires if the respondent has clearly indicated they refuse or object to answering the question.

Response unidentifiable

This category is used when there is a response given, but:

- the response is illegible, or
- it is unclear what the meaning or intent of the response is – this most commonly occurs when the response being classified contains insufficient detail, is ambiguous or is vague, or
- the response is contradictory, for example, both the yes and no tick boxes have been ticked, or
- the response is clear and seemingly within the scope of the classification, but can not be coded because no suitable option (particularly other residual category options such as 'not elsewhere classified' or 'not further defined') exists in the classification or codefile.

Response outside scope

This category is used for responses that are positively identified (that is, the meaning and the intent are clear) but which clearly fall outside the scope of the classification/topic as defined in the standard.

Not stated

This category is **only** used where a respondent has not given any response to the question asked, that is, it is solely for non-response.

References

Australian Bureau of Statistic - ABS survey of domestic energy and water use 2004

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<http://www.mfe.govt.nz/publications/energy/warm-homes-home-heating-methods-fuels-nz-nov05/warm-homes-home-heating-methods-fuels-nz-nov05.pdf>

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<http://www.stats.govt.nz/statistical-methods/classifications-and-related-statistical-standards/fuel-types-used-in-dwellings/default.htm>