

## Generating your own power - HomeGen

### What is HomeGen?

The Genesis Energy HomeGen plan is designed for customers with distributed or embedded generation facilities. These facilities are often associated with an energy load operating in parallel with, and connected to, the local distribution network.

The critical aspect of this connection type is that, depending on the generation output and load, the customer connection will either take energy *from* the grid or supply energy *to* the grid. The term 'distributed generation' is used because the generation is distributed alongside load within the distribution system, rather than in large power stations. Genesis Energy can be both the supplier of back-up and/or supplementary energy, and the buyer of surplus output from the generating plant, after supplying the customer's load.

Genesis Energy's HomeGen product is designed for distributed or embedded generation facilities with less than 10kW capacity. This is the most common type of generation associated with home or small commercial loads. A HomeGen Facility is connected to the distribution network and energy may flow in either direction between the distribution network and the customer connection, depending on the generation output and customer load. For example, if a customer has a solar photo-voltaic generator, then on a winter morning, energy will come *from* the grid ('import'). If the customer goes out during the day and electricity consumption therefore reduces, energy will be supplied *to* the grid ('export').

Other types of generation connections exist, but these are not suitable for Genesis Energy's HomeGen Plan. These include:

#### **Stand-alone, independent, or island generation supplying an isolated load, with no connection to the grid.**

Examples where stand-alone generation is used include farms, huts, batches in remote areas and offshore islands, and motorway emergency telephones. Typically, these systems have batteries to store energy between the time it is generated and the time it is used. The energy generator and consumer (who may be different) would have no relationship with Genesis Energy in relation to energy supply.

#### **Back-up or standby generation for use only when the public supply is disrupted - to allow some critical equipment to continue.**

Examples where back-up generation is used include emergency generators for hospitals, rest-homes, water supply and industrial plant. This type of connection has a changeover switch so the load is supplied *either* by the public supply *or* by the generator, but *never both*. In such cases, Genesis Energy may supply the customer from the public network when it is available, but if supply is disrupted, the customer acts independently.

#### **Large-scale power stations (>50MW capacity), where the generator (and possibly associated industrial load) are connected directly to the grid (as distinct from the local distribution network).**

The cogeneration plant at Fonterra's Te Awamutu dairy factory is an example of a large scale power station. These projects require specific technical and commercial arrangements between a number of parties.

## Industry Rules relating to HomeGen

A range of rules and regulations are currently being developed by the [Ministry of Economic Development](#) and the Electricity Commission to standardise how small-scale generation is incorporated into the electricity industry. Regulations are expected to cover:

Network Company charges for distribution lines used by small generators;

- Minimum standards for metering small-generation energy flows, and accounting for these flows within the national wholesale electricity market;
- How consumers with generation facilities can switch between different energy retailers to achieve competitive commercial outcomes.

These rules and regulations are expected to be released in the near future. Genesis Energy has based its Special Terms and Conditions for HomeGen on proposed rules and regulations. Once the rules and regulations have been finalised, Genesis Energy may need to revise these terms and conditions to ensure they fully comply.

## Thinking of installing a HomeGen Facility?

If you are considering installing a HomeGen Facility you will need to research a number of aspects before you begin. Typical questions include:

- What kind of HomeGen Facility is most suitable for your site?
  - Do you need a resource or building consent?
  - How much energy output is expected?
  - Will back-up power be required?
  - How much will it cost - both initially and on an ongoing basis?
  - What technical and safety requirements must the HomeGen Facility comply with? (refer to your local Network Company and New Zealand Standards)
  - How much money will be saved on your power bill?
  - What should you do if there is an energy surplus?

Genesis Energy recommends that you undertake detailed research and get advice from a range of people so that the full implications of any HomeGen Facility proposal are understood, and no surprises emerge when it is too late. Listed below are organisations that can offer advice. Please be sure to check and understand the safety and technical requirements of your local Network Company and any legal or regulatory requirements including standards.

You can check out the following two websites to find further information.

[www.standards.co.nz/default.htm](http://www.standards.co.nz/default.htm)

[www.electricitycommission.govt.nz](http://www.electricitycommission.govt.nz)

## Now you've decided to proceed...

We recommend that before you commit to purchasing any equipment, you obtain the required permission and/or consents. The main ones are:

- Resource and/or building consents from your local authority;
- Acceptable commercial arrangements with Genesis Energy;
- Acceptance of safety and technical aspects of the proposed HomeGen Facility from the Network Company where the HomeGen Facility will be connected.

If you accept Genesis Energy's Special Terms and Conditions for HomeGen and HomeGen purchase rates for Exported Electricity in your area, then you should complete, sign and send an application form to us.

You will need to contact your local Network Company to ensure compliance with their requirements. They have primary responsibility for safety and technical compliance and will need to know more technical information about your proposed HomeGen Facility.

Genesis Energy will be able to advise you whether or not we accept your HomeGen application once the local Network Company confirms that your HomeGen Facility can proceed.

## Commercial arrangements for HomeGen

All electricity retailers (for example, Genesis Energy) have responsibilities under a comprehensive set of industry rules, for every customer installation - including those with a HomeGen Facility. The retailer is recorded in a registry operated by the Electricity Commission. The retailer is required to ensure suitable metering is provided and that the energy supplied to or from the customer installation is fully accounted for. A single customer installation can be the responsibility of only one retailer and cannot be divided (e.g. it is not permitted for Retailer A to supply consumption load and Retailer B to buy any Exported Electricity).

As the customer, you and your retailer have a commercial relationship defined by the terms and conditions of supply and the appropriate tariff schedule. Once a HomeGen Facility is installed, this relationship changes and a variation to your commercial arrangement is required. In some cases there are tax issues that need to be provided for.

Genesis Energy has developed Special [Terms and Conditions](#) for HomeGen.

## What are the purchase rates for HomeGen Exported Electricity?

We will purchase surplus energy from HomeGen customers. These rates are based on Genesis Energy's estimated value of surplus energy on the wholesale market, taking into account the expected variations in wholesale price over the year due to weather and other factors, and risks associated with supply uncertainty and administration costs.

The same energy value is one of the components of Genesis Energy's retail consumption tariffs, which cover a bundle of services. The bundle includes direct costs of wholesale energy, transmission, distribution, metering and customer service costs, as well as margins to cover the risks inherent in predicting prices far in advance and serving a large customer base consistently. The energy from HomeGen Facilities only equates to part of this bundle, hence the lower price

offered to you. Like most businesses, Genesis Energy does not pay for raw materials at retail prices.

We offer three purchase rates: Anytime, Day/Night and Seasonal. The most appropriate option for you will depend on the characteristics of your HomeGen Facility and your consumption level and pattern. For example, if you have a solar photo-voltaic HomeGen Facility (which only operates during the daytime), you would probably benefit from separate Day/Night rates. In comparison, if you have a wind generator that might operate at any time, an anytime rate maybe more suitable for you. Our Seasonal rate may be better for customers whose consumption varies between seasons.

Genesis Energy will purchase surplus energy from HomeGen customers. To find out what the purchase rates for HomeGen are please contact our Customer Care Team on 0800 300 400.

### **Is special metering required for HomeGen Facilities?**

It is likely you will require new or additional metering equipment at your site if you install and operate a HomeGen Facility. The electricity industry rules in relation to generation from HomeGen Facilities are expected to require separate metering of energy flow in each direction - referred to as import/export metering. Genesis Energy offers a number of low-cost metering options for this, depending on the Exported Electricity purchase pricing option that you choose (see above section). The import and export meters will be read by the normal meter reader - typically once every two months (urban areas) or three months (rural areas). An export meter is required even if you don't expect to export very much energy. With a HomeGen Facility, export may happen unexpectedly, and the energy flows in the network have to be accurately accounted for.

### **Are there any additional charges?**

There is a \$100 base fee for changing or installing required metering, and a small on-going charge to cover the extra cost of import/export metering compared to a consumption-only situation. The HomeGen meter charge depends on the Exported Electricity pricing option selected.

### **What about net metering?**

Genesis Energy anticipates that the electricity industry rules will not allow 'net metering'. Some other countries allow net metering because it seems very simple, but they ignore the fact that the simplicity creates significant distortions in the reconciliation of energy. Net metering inherently values export energy at the full retail rate, and achieves this from cross-subsidy from other consumers. There are also complications with GST if the import and export flows are combined into a single (net) meter reading. Genesis Energy believes that any generation investment should be made on the basis of rational economic merit, rather than relying on cross-subsidy from other consumers.

### **How will I be billed?**

Genesis Energy will combine the charges for energy consumption and the credit for any Exported Electricity on the same invoice. This is referred to as 'net billing'. The import/export meters will be read at the same time and the relevant rates applied as a debit or credit as appropriate. Genesis Energy will create a 'buyer created invoice' that will detail the electricity generated by the HomeGen Facility and the Exported Electricity purchase price. The resulting credit will be transferred to your energy bill. Your HomeGen bill will detail the various meter readings and costs in each direction and the net amount payable by you or Genesis Energy.

In general, Genesis Energy anticipates that most HomeGen customers will still receive an energy bill with a net amount payable to Genesis Energy, although that amount will be less than without a HomeGen Facility. If your HomeGen Facility is much larger than your consumption load, your energy bills will generally provide for a net credit payable to you by Genesis Energy.

Legally, the buyer-created invoice is an invoice from you to Genesis Energy. If you are not registered for GST, then the buyer-created invoice will not have GST applied. If you are GST registered, then Genesis Energy will provide an IRD-compliant tax invoice, and there will be a charge for doing so.

As a HomeGen customer you should note that income received from sale of your HomeGen Exported Electricity is taxable, and should be included in your tax return. Genesis Energy does not withhold any tax from HomeGen Export Electricity purchases so this is a matter for you to attend to. In general some of the costs of operating the HomeGen Facility may be able to be offset against the income earned, but appropriate professional advice should be obtained.

## **How do I go about installing a HomeGen Facility?**

The steps Genesis Energy suggests for installing a HomeGen Facility are as follows:

Undertake Research. Investigate generation technology, available energy resources, demand and capacity, costs, technical requirements, consents required etc, and formulate your HomeGen Facility proposal

1. Complete, sign and return the HomeGen Application Form to Genesis Energy along with the \$100 base metering fee. Confirmation of the arrangement will be provided after we have received advice from your local Network Company that your HomeGen Facility can precede.

2. Apply to your local Network Company for permission to connect your HomeGen Facility to their network. They should also confirm that you have made arrangements with your energy retailer (for example Genesis Energy). Provided your proposal complies with their technical and safety requirements, the Network Company should confirm your HomeGen Facility can proceed.

3. Install the HomeGen Facility. This will need to be done by specialists with electrical wiring completed by a registered electrician.

4. Install the required meters for the HomeGen Facility. You will need to confirm a date for the meter installation change to occur with your energy retailer (for example Genesis Energy) - please allow 5 working days notice.

5. Inspection and livening of the HomeGen Facility and completion of obtaining certificate(s) of compliance. This should be done in accordance with the individual Network Company requirements. Some Network Companies require a visit by a licensed electrical inspector.

## **Glossary**

**Bio-diesel** generation means generation using fuel derived from vegetable oils, animal fats or organic wastes.

**Co-generation** is the combined generation of heat and electricity from a single set of equipment.

**Electricity retailer** means a supplier of electricity to end consumers (e.g. Genesis Energy).

**Export** describes the situation where electricity flows from a consumer's installation to the local distribution network

**Exported Electricity** means electricity produced from a HomeGen Facility which is over and above the requirements of the customer at the Premises and which the customer exports into the Network with agreement from the Network Company.

**Fuel cells** are devices that produce electricity via an electro-chemical reaction.

**Grid** means the national transmission network operated by Transpower New Zealand Limited that conveys electricity from major power stations to local distribution networks.

**HomeGen** (distributed generation, embedded generation, or small scale power generation) means small scale electricity generation often associated with a load and capable of exporting electricity to the local distribution network.

**HomeGen Facility** means a facility installed at the customer's Premises and connected to the Network that generates electricity and has a maximum generating capacity of 10kW.

**Import** describes the situation where electricity flows from the local distribution network to a consumer's installation.

**Micro hydro** generation means a small scale device that uses water to generate electricity.

**Network** means the electricity distribution network to which your Point of Supply is connected including the network of overhead lines, underground cables and pipelines, substations and other equipment used to distribute electricity.

**Network Company** means the company or organisation that owns the Network.

**Point of Supply** means the point at which Genesis Energy determines that the Network ends and your lines, cables or pipes and fittings and equipment begin.

**Premises** refer to the property supplied with electricity by Genesis Energy.

**Solar (photo-voltaic)** generation means a device that uses the sun's energy to generate electricity.

**Wind turbines** are devices that use wind to generate electricity.