

CHAPTER 16 - ENERGY

INTRODUCTION

The purpose of this chapter is to recognise resource management issues regarding energy within the region, and provide policy guidance for addressing those issues that are not addressed elsewhere in the Canterbury Regional Policy Statement. It is recognised that significant energy issues relating to supply, affordability and emissions are addressed primarily at the national and international level.

Energy is also **(sub Meridian 42.173)** a critical factor in enabling the community to provide for their well-being, health and safety. Canterbury's economy depends on access to a reliable supply of energy. Energy is an essential resource for the transport, agricultural, industrial, commercial and residential sectors. **Energy is used to generate electricity, as a solid fuel source for heating and cooling and as a liquid fuel primarily in the transport sector with specific associated resource management issues (sub EECAA 27.48).**

Demand for energy from all sectors is expected to continue to grow into the future, which raises issues and challenges to the region as it ~~confronts~~ **addresses (sub Meridian 42.173)** not only its growing energy demand and a move towards improved energy efficiency, but also its role in delivering energy which ~~will extend~~ **s (sub Meridian 42.173)** beyond Canterbury.

The contribution of renewable electricity generation ~~can~~ **is of national significance** and plays **(sub EECAA 27.48)** a vital role in meeting increasing energy demand, and ~~accordingly that~~ **significance (sub TrustPower Ltd 26.54) should be recognised and provided for (sub TrustPower 26.54)**. The benefits of renewable generation at all scales can avoid, reduce or displace greenhouse gas emissions, and also increase security of supply. Scale and location of renewable energy projects are often important factors when considering their appropriateness, as they tend to locate close to natural energy sources, which can create conflicts with cultural, ecological and landscape values.

The current diversity of energy generation in Canterbury is limited. Canterbury is a significant producer of hydro-electricity. The eight hydro stations on the Waitaki River system produce a significant proportion of the nation's electricity. However, overall Canterbury is a net importer of energy. In 2006, 57% of the region's energy use was in the transport sector with the majority of that energy coming from imported oil fuels. In total in 2006, 68% of Canterbury's energy consumption was fossil fuels (i.e. oil, gas and coal), the majority of which are imported into the region. **Canterbury also has significant wind energy resources. (sub NZWEA 33.26)**

While access to energy is vital to the social, cultural and economic well-being of the region, adverse effects from the generation, distribution and use of energy can occur **and must be considered alongside the positive effects (sub EECAA 27.48)**. Generation facilities may cause adverse effects, through modification of natural resources such as water or ecosystems, or by impacting on important values associated with landscapes or recreation. The distribution of energy can result in detracting of landscape values, or in the case of transport fuels, can pollute land and water if fuels are handled incorrectly. The use of energy can also cause adverse effects, for example the use of energy in the transport sector may adversely affect local air quality.

Making better use of energy can **result in a range of efficiency benefits and can (sub EECAA 27.48)** reduce demands on energy-resources and thereby delay the need for investment in new energy supplies and infrastructure. It can also improve energy security by reducing the possibility of demands exceeding the supply of energy.

Technology for the generation, distribution and use of energy is evolving. This new technology may have an important role in promoting sustainable energy development and use. As finite resources, such as oil, become scarce and more expensive, development of new technologies for producing energy from renewable sources will be necessary to enable continued economic growth. Improvements in technology ~~should~~ **could** (sub Meridian 42.173) also ensure that energy production does not come at the cost of significant adverse effects to the environment. Technology will also make our use of energy more efficient as better manufacturing processes reduce the amount of “embodied energy” in our products and those products in turn are able to perform the same functions with lower energy input.

Local government policy statements and plans have a critical role in terms of providing recognition of the outcomes sought at a **regional and** (sub EECOA 27.48) local scale by the community, and acknowledging a wider national interrelationship and interdependence in terms of energy generation, management and transmission.

Local government is able to plan for energy-efficient urban and rural development, and is able to facilitate energy production and distribution, including transport, while managing adverse effects on the environment. Finally, local government is able to provide for energy infrastructure by enabling ongoing operation and maintenance and managing reverse sensitivity effects, while also managing the adverse effects of this infrastructure on the environment. Through information and incentives, local government can encourage businesses, householders and institutions to adopt energy efficiency practices and to install small **and community** (sub EECOA 27.48) scale energy producing technology such as photovoltaic cells and wind turbines. Such measures would assist communities to be resilient in the face of physical disruption or rapid price changes

There are issues that may be best addressed by central government, including energy pricing, preparation for oil supply shortages, legislating for energy efficiency (e.g. banning the sale of inefficient electrical appliances) and setting standards for the control of emissions from the production of energy. Central government also must address issues of national significance as they arise and also has the power to “call in” resource consent applications for large-scale or nationally significant energy production and distribution infrastructure projects. Government initiatives influence the approach in relation to energy within Canterbury, such as the National Policy Statement on Electricity Transmission, and the National Policy Statement for renewable Electricity generation. The CRPS provides the regional approach to give effect to both of these national policy statements. **The Government’s target is for 90% of New Zealand’s electricity generation to be from renewable energy resources by 2025. In order to meet this target it will be necessary to increase the output capacity of renewable electricity generation within New Zealand through the development of new renewable electricity generation activities. While seeking to improve energy efficiency is important this will not address the necessary demand for electricity. The development and use of renewable electricity generation facilities face a number of barriers that include the difficulty in securing access to natural resources as well as functional, operational and technical factors that constrain the location, layout, design and generation potential of renewable energy facilities. The adverse environmental effects of renewable electricity generation facilities can also be a barrier, if they are not appropriately managed.**

(sub Mainpower NZ 32.32)

There are international conventions and agreements in place that also affect the way in which we manage energy production and use. Most notably, agreements to reduce the quantity of greenhouse gas emissions into the atmosphere, and these are likely to lead to significant

changes in the way we generate electricity and in the way we look to solve transport problems into the future.

While transport and energy are inextricably linked, the energy issues surrounding transport energy are best resolved through land-use planning and as such, Chapter 5 - Land-use and Infrastructure and Chapter 6 – Development of Greater Christchurch address transport efficiency. **The protection of energy supply is also an important consideration in land use planning decisions, with Chapter 5 of the RPS having the strategic integration of land-use and regionally significant infrastructure in the wider region as a focus. (sub Transpower NZ 38.2)**

Energy has implications for water, landscapes, the coastal environment, biodiversity and heritage. Water is a resource harnessed to generate electricity. Landscapes are altered by generation and transmission and transport infrastructure. The coastal environment may ~~suffer~~ **be subject to adverse (sub NZWEA 33.26)** effects similar to those that occur in landscapes. The coastal environment is emerging as a potential source of electricity generation, and may also be subject to oil prospecting in the future. Biodiversity can be affected by energy generation and distribution activities, while the use of energy can have flow-on effects, such as discharges of gasses to air, that may be harmful to biodiversity. Energy use and access to energy sources have helped to shape our cultural heritage, affecting the position of transport routes, the placement of settlements and creating some heritage features such as historic dams. Works for the generation and distribution of energy, including transport may also adversely affect the heritage values of areas such as wāhi tapu. These issues are addressed through the provisions of **both Chapter 16 and other** the-relevant-chapters **as relevant. If there is a perceived conflict between competing policies, the provisions of all the applicable chapters will be evaluated and applied on a case-by-case basis (sub Transpower NZ 38.2).**

16.1 ISSUES

Issue 16.1.1 – Efficiency of ~~the use of~~ energy consumption (Clause 16(2) & sub EECAA 27.50)

Inefficient ~~use of~~ energy consumption places pressure on ~~existing~~ infrastructure **to meet demand,** and results in the unnecessary development of new infrastructure, which can cause adverse effects ~~to people and~~ **on (sub EECAA 27.50)** the environment.

Explanation

Energy can be used inefficiently for many reasons. These include:

- (1) **Subdivision Land use and (sub Mobil NZ37.19, Transpower 38.23)** development not lending itself to efficient transport
- (2) Insufficient incentive to use energy efficiently
- (3) Lack of awareness about costs of inefficient use
- (4) Changing to efficient use may require significant investment of capital, while the cost of inefficient use seems nominal
- (5) Traditionally ingrained practice – for example, New Zealand houses have traditionally been built with little consideration of energy-efficiency.

Inefficient use of energy in one area, or by individuals can seem insignificant. Collectively however, the inefficient use of energy has significant costs. More energy must be produced and then distributed.

Issue 16.1.2 – Maintaining and increasing the (sub EECAA 27.52) security of supply

There is a need to reduce risk in relation to the secure supply of energy, as **energy (sub Transpower 38.3)** is vital to enabling people and the community to provide for their social, cultural and economic well-being and their health and safety.

Explanation

Energy is relied upon in every aspect of daily life and is a basic requirement to life, providing transport, shelter, warmth and sustenance. When energy supply is disrupted, people are unable to continue living in a normal way. For example, fuel shortages may affect the ability for people to be able to travel to work or school, while electricity cuts may result in people being unable to cook meals.

The ability of existing generation infrastructure, **whether renewable or non-renewable, (sub EECAA 27.52)** to operate at capacity depends largely on access to resources which can include water, wind, wood, or fossil-based fuels. In Canterbury, access to fresh water **and potentially wind is a significant resource requirement for** ~~is a major constraint to~~ **(sub Meridian 42.176)** existing **and new (sub Genesis 44.64)** electricity infrastructure, particularly as there are competing uses and values associated with fresh water, including agricultural irrigation and cultural activities and values important to Ngāi Tahu (e.g. mahinga kai, maintenance of mauri). In addition, existing energy generation and transmission infrastructure may be insufficient and/or lack sufficient diversity to provide for the current and future energy needs of the region, or a wider contribution in meeting energy demands that extend beyond Canterbury.

There are significant undeveloped renewable resources in Canterbury particularly hydro and wind, all of which, including small and community scale generation have a role to play in improving security of supply. (sub EECAA 27.52)

In regard to solid and liquid energy sources, there is potential to increase the use of renewable fuels through utilising bio-energy, both wood energy and biofuels. The direct use of renewable energy resources for heating and the use of renewable liquid resources for transport fuels are also addressed in Chapter 14 Air Quality. (sub EECAA 27.52)

Bulk fuel distribution and storage is also a regionally significant component of the regional and national energy supply network. It is important that the supply network, including bulk storage is recognised in terms wellbeing, health and safety benefits, particular where sensitive activities would otherwise constrain the ability to develop, operate, maintain and upgrade this network. (sub Mobil et al 37.14)

With competition for resources such as water, and a desire (or legislative requirement) to protect natural environments and landscapes, opportunities for new renewable generation facilities can be limited. **As adverse effects cannot always be avoided, remedied or mitigated, the effects of development on renewable electricity generation activities need to be managed. (sub EECAA 27.52)**

The ability of network operators to transmit energy to consumers is dependent on their ability to undertake maintenance of, and upgrade and develop of **(sub Transpower 38.4)** the network infrastructure. Reverse sensitivity, adverse effects on resources and amenity values are all constraints to the network operator's ability to develop, operate, maintain and upgrade the network. The ability to develop, operate, maintain and upgrade the transmission network has been recognised as a matter of national significance in a national policy statement.

Issue 16.1.3 – Adverse environmental effects of the production, distribution and use of energy

The production, distribution and use of energy can cause significant adverse effects on the environment, including people and communities.

Explanation

The production, distribution and use of energy can cause adverse effects on the environment, including the social, economic and cultural well-being of people and communities.

Electricity generation may result in land being flooded for hydro lakes. The distribution of energy through transmission line networks, or extraction of mineral fuels such as coal or oil can have adverse effects on landscapes. The use of carbon-based fuels in the transport sector or for residential heating (wood or coal fires) can create localised problems such as degradation of local air quality. Ensuring that the end-use of energy is efficient can minimise these effects.

Electricity generation can affect the relationship that Ngāi Tahu has with resources, including wāhi tapu, wāhi taonga and ancestral lands and water. The adverse effects on the relationship of Ngāi Tahu with resources can occur due to access to resources being limited, loss of mauri of the resources, or activities taking place that conflict with tikanga ~~and~~ Māori. In particular, the damming of rivers affects the mauri and the mahinga kai resources associated with those rivers and ultimately, the ability for Ngāi Tahu as tangata whenua to act effectively as kaitiaki.

Issue 16.1.4 – Balancing conflicts created by the effects of renewable electricity energy (sub EECAA 27.54) generation with the benefits of renewable energy

The benefits from any renewable electricity energy generation, at any scale, are of significance in terms of providing for increasing regional electricity energy demands, as well as a wider contribution to meeting electricity energy demands that extend beyond Canterbury. However, renewable electricity energy projects tend to be located close to natural electricity energy **(sub EECAA 27.54)** sources; this can create conflicts with a wide range of biophysical and community held values and raise issues of scale and location.

Explanation

The benefits from any renewable electricity energy **(sub EECAA 27.54)** generation proposal, or existing renewable electricity energy **(sub EECAA 27.54)** source, can range from large,

significant contributions, to small incremental gains, but they are all cumulative. Such incremental increases in renewable electricity generation capacity can assist in improving the proportion of electricity supply from renewable sources, and increase the diversity of supply from within Canterbury. **New renewable generation capacity could contribute to the New Zealand Energy Strategy target, and to increasing the diversity of supply.** (sub Mainpower 32.35)

There are also practical constraints associated with the development, operation, maintenance and upgrading of new and existing renewable electricity generation activities. Typically, the generation of renewable **electricity** energy (sub EECAA 27.54) is dependent on natural energy sources that may well also **might in some circumstances** (sub Meridian 42.180) be located in areas with significant **natural character, significant amenity values, historic heritage, outstanding natural features and landscapes, significant indigenous vegetation, significant habitats of indigenous fauna and cultural values. In some circumstances** and sensitive landscape, natural character, ecological and amenity values. A **adverse effects** associated with the **development, operation,** (sub EECAA 27.54) maintenance **and** upgrading **e** and development of renewable electricity generation and associated infrastructure **on those resources** may not be able to be **cannot be** practicably avoided, and sometimes the effects can even be difficult to mitigate or remedy **and should therefore be remedied or mitigated.** (sub EECAA 27.54)

This tension between the benefits of renewable **electricity** energy (sub EECAA 27.54), and the associated effects from its development, is a significant issue for renewable development in Canterbury.

16.2 OBJECTIVES

Objective 16.2.1 – Efficient use of energy

Development is located and designed to enable the efficient use of energy, including:

- (1) maintaining an urban form that shortens trip distances
- (2) planning for efficient transport, including freight
- (3) encouraging energy-efficient urban design principles
- (4) reduction of energy waste.
- (5) avoiding impacts on the ability to operate energy infrastructure efficiently.**
(sub Transpower 38.9)

~~so that demand for distribution and transport infrastructure is reduced.~~ **(sub EECAA 27.56)**

The following policies implement this objective:

5.3.1, 5.3.2, 5.3.3, 5.3.8, and the Development of Greater Christchurch generally, and 16.3.1 (sub Kaikoura DC 30.64).

Principal reasons and explanation

The use of energy can be made more efficient if development is designed and located to reduce the need to commute over significant distances, and services are closer to the population base. Transport planning can encourage more efficient options such as public passenger transport or efficient freight transport (for example, transport of freight by rail and sea may be more efficient than transporting by road). Energy-efficient urban design principles, such as orientating and placing housing so that solar gain is maximised, provide long-term energy efficiency. Reducing the amount of waste generated (including energy waste) reduces unnecessary energy input. Waste reduction measures can be included in design and development, for example by encouraging or requiring new buildings to install energy efficient measures or systems. Inefficiencies Waste can also occur through transmission loss such as where the location and scale of generation (or supply) does not match areas of demand. (sub Transpower 38.10) Inappropriate development can affect the ability to operate electricity transmission infrastructure at its full capacity and this should be avoided to minimise the need for new infrastructure. (sub EECAA 27.56)

This objective will be implemented through the provisions of Chapter 5 – Land-use and Infrastructure, Chapter 6 – Development of Greater Christchurch, and Chapter 19 – Waste Minimisation and Management.

Objective 16.2.2 – Enable Promote (sub Meridian 42.182) a diverse and secure supply of energy

~~A~~ **Reliable and resilient generation and (sub Mainpower 14.6) supply of energy for the region, and wider contributions beyond Canterbury, with a particular emphasis on renewable energy, which:**

- (1) provides for the appropriate use of the region’s renewable resources to generate energy;
- (2) reduces dependency on fossil fuels;
- (3) ~~improves efficiency in the end use and transmission of energy~~ improves the efficient end-use of energy;
- (4) minimises transmission losses; (sub Kaikoura DC 30.66)
- (54) is diverse in the location, type and scale of renewable energy development;
- (6) Recognises the locational constraints in the development of renewable electricity generation activities; (sub Mainpower 32.36, Meridian 42.182) and
- (7) a) avoids any adverse effects on significant natural and physical resources and cultural values (sub Ngai Tahu 98.160) ~~are avoided~~, or where this is not practicable, remedies or mitigates them; and
b) appropriately controls other adverse effects on the environment ~~are appropriately controlled~~ (sub Trustpower 26.59).

The following policies implement this objective:

Policy 5.3.1, Policy 5.3.2, Policy 5.3.3, Policy 5.3.8, Policy 6.3.1, Policy 6.3.2, Policy 6.3.3, Policy 6.3.4, Policy 6.3.6, Policy 6.3.7, Policy 6.3.8. Policy 6.3.9, **Policy 16.3.2, Policy 16.3.3, Policy 16.3.4 and Policy 16.3.5 (sub Kaikoura DC 30.65).**

Principal reasons and explanation

Canterbury is one of the fastest growing regions in New Zealand. To fuel this growth, energy is used in many areas including transport, agriculture, the power industry, manufacturing, domestic and business use. Regional growth also puts pressure on the networks that supply the region's growing energy demands. Canterbury's electricity usage is generally higher than the New Zealand average, with a typical summer time peak demand **in rural areas and winter time peak demand in urban areas (sub Mainpower 14.6).**

To accommodate such growth, the Canterbury region needs an energy system that is reliable and resilient. The region contains a very good, but narrow source of renewable energy supply, based around hydro electricity generation. Canterbury is a significant contributor to New Zealand's hydro electricity generation and distribution infrastructure. Generators range in scale from the ~~substantial~~ **largest being the** Waitaki Hydro Electric Power Scheme (HEPS), **substantial schemes such as the (sub Meridian 42.183)** and Coleridge HEPS, to moderate operations such as Highbank and Opuha, and a number of smaller hydro schemes associated with irrigation schemes.

Maximising the ability to appropriately harness the region's renewable resources, such as wind, water and bio-matter to provide energy for the Canterbury community, will ensure there is a suitable supply of energy into the future. Using the region's resources within Canterbury will ensure that the community is more self reliant, depending less on imported energy.

Diversity in type, location and scale of energy development means that electricity, transport fuels, and other energy should come from a range of sources and via a range of distribution networks. This diversity will ensure that problems with energy infrastructure are easier to overcome than they would be if energy supply was dependant on one source.

As explained under Issue 16.1.1 above, efficient use of energy ~~reduces~~ **may result in reduction of** the need to generate or provide more energy. Efficient use of energy ~~will ensure existing infrastructure will have~~ **may contribute to existing infrastructure having** sufficient capacity to meet future demand. **(sub Mainpower 14.6)**

There are a number of practical barriers to the further diversification of renewable energy sources within Canterbury including, the nature and location of the renewable energy source, and access to supporting infrastructure. Accordingly, it is acknowledged that any renewable energy generation proposal, or expansion of existing renewable energy sources may result in substantial adverse effects on the environment which could be impractical to avoid. The amenity values of nearby communities may also be impacted. There is a need to carefully balance the benefits associated with renewable energy electricity generation projects with ~~such costs~~ **the actual and potential adverse effects on the environment (sub Meridian 42.183). Even though they may have potential adverse effects, there is also a need to recognise and provide for the benefits of renewable electricity generation as a matter of national significance. (sub NZWEA 33.31)**

16.3 POLICIES

Policy 16.3.1 – Efficient use of energy

To promote the efficient end-use of energy in order to avoid or mitigate adverse effects on the environment (sub EECAA 27.60).

This policy implements the following objectives:

Objective 16.2.1 and Objective 16.2.2.

16.3.1 Methods

The Canterbury Regional Council:

Should

- (1) Advocate energy conservation and efficient energy use through the development and implementation of the Regional Energy Strategy, Regional Land Transport Strategy and Canterbury Water Management Strategy.
- (2) Advocate to, cooperate, coordinate and participate with central government, territorial authorities, energy conservation authorities and groups, **Te Rūnanga o Ngāi Tahu and Papatipu Rūnanga.(sub Ngai Tahu 98.162)** ~~Te Rūnanga o Ngāi Tahu~~ and interested parties to promote:
 - (a) Better understanding of energy efficiency and how this may be achieved
 - (b) Use of more energy-efficient products and technologies
 - (c) Implementation of energy efficiency and renewable programmes
 - (d) Reductions in regional travel demand, including by reducing trip distances
 - (e) Passive solar gain in developments.
- (3) Encourage and provide advice for householders, institutions, businesses and other organisations, on energy efficiency initiatives, including travel management planning.

Principal reasons and explanation

Section 7 of the RMA requires that people operating under the provisions of the RMA must have particular regard to the efficiency of the end-use of energy when exercising powers and functions under the Act.

The Canterbury community is able to achieve energy savings through promoting measures which conserve energy or use it more efficiently. At a micro scale, many of the buildings in

Canterbury are commonly inefficient, lacking insulation and being and difficult to heat. Sustainable building design to maximise energy efficiency (such as through design to increase solar gain, and insulation), and opportunities to utilise renewable energy (such as solar) can reduce energy consumption. ~~At a wider community level, improvements in energy efficiency can be made through subdivision and land use designs that decrease travel demand, and thereby fossil fuel use, through providing alternatives such as public transport, or making walking and cycling more attractive.~~ **At a wider community level, improvements in energy efficiency and reduction in fossil fuel use can be made by:**

(a) Designing subdivision and land use that decreases travel demand;

(b) Providing public transport;

(c) Promoting the movement of freight by rail and coastal shipping; and

(d) Making walking and cycling more attractive. (sub Lyttelton Port Company Ltd 55.34)

Energy conservation and efficiency **promotion can seek to** reduces Canterbury's dependence on limited energy resources from non-sustainable sources. ~~If Canterbury uses less, what it has will last longer.~~ (sub MainPower 32.37)

Policy 16.3.2 – Small and community (sub Trustpower 26.60) scale distributed renewable electricity generation

Encourage and provide for the operation, maintenance, upgrading and development of small and community (sub Trustpower 26.60) scale distributed renewable electricity generation provided that:

- (1) ~~the any adverse effects on significant natural and physical resources or cultural values (sub Ngai Tahu 98.163) are avoided, or where this is not practicable, remedied or (sub Mainpower 32.38, Department of Conservation 78.52) mitigated; and~~
- (2) **other adverse effects on the environment are appropriately controlled.**

This policy implements the following objectives:

Objective 16.2.2

16.3.2 Methods

The Canterbury Regional Council:

Will

- (1) ~~Set out objectives, policies or methods~~ **Set out objectives and policies, and may include methods** (sub Transpower Sub 37.1, 38.1) in regional plans to encourage and provide for the use of small **and community** (sub TrustPower 26.60) scale distributed

renewable electricity generation for residential, commercial, industrial and agricultural purposes. **(sub Solid Energy NZ Ltd 16.22)**

Should

- (2) Encourage, through education and advocacy, the use of small-scale distributed renewable electricity generation.
- (3) Advocate the use of small-scale distributed renewable electricity energy generation across all sectors.
- (4) Consider providing incentives to encourage installation of small-scale renewable electricity generation to build levels of community resilience.

Territorial authorities:

Will

- (5) ~~Set out objectives, policies or methods~~ **Set out objectives and policies, and may include methods** (sub Transpower Sub 37.1, 38.1) in district plans to encourage and provide for the use of small **and community** (sub TrustPower 26.60) scale distributed renewable electricity generation.

Principal reasons and explanation

Small-scale distributed renewable electricity generation provides an opportunity for the Canterbury community to become partially self-reliant for energy supply. Technologies that currently exist, which enable individuals to harness energy sources such as hydro, solar and wind, are likely to improve and become more cost-effective into the future. As demand for energy increases, self-reliance will have economic benefits for individuals and the region as a whole.

Small-scale distributed renewable electricity generation will reduce loading on existing large-scale infrastructure and may in some cases assist in avoiding adverse environmental effects by reducing the need for significant upgrade or replacement of larger-scale infrastructure. This may be effective when applied to energy-intensive heavy industry or irrigation-dependent agriculture. This is particularly relevant where land-use or proposed land-use is energy intensive and/or provision can be made for on-site energy generation with minor environmental effect or economic cost. It is also considered that in order for local-scale generation to be resilient, it should not rely on imported fuels.

Policy 16.3.3 – Benefits of renewable energy generation facilities

To recognise **and provide for** (sub EECAA 27.53) the local, regional and national benefits when considering proposed or existing renewable energy generation facilities, having particular regard to **the following**:

- (1) **maintaining or increasing electricity generation capacity while avoiding, reducing or displacing greenhouse gas emissions;**
- (2) **maintaining or increasing the security of supply at local and regional levels, and also wider contributions beyond Canterbury, by diversifying the type and / or location of electricity generation;**
- (3) **using renewable natural resources rather than finite resources;**
- (4) **the reversibility of the adverse effects on the environment of some renewable electricity generation facilities;**

- (5) **avoiding reliance on imported fuels for the purposes of generating electricity; and**
(63) **assisting in meeting international climate obligations. (sub EECAA 27.53)**

This policy implements the following objective:

Objective 16.2.2.

16.3.3 Methods

The Canterbury Regional Council:

Will

- (1) ~~Set out objectives, policies or methods~~ **Set out objectives and policies, and may include methods (sub Transpower Sub 37.1, 38.1)** in regional plans that recognise the local, regional and national benefits of a renewable energy supply, including security of supply, providing for electricity capacity, and assisting in meeting international climate obligations.

Territorial authorities:

Will

- (2) ~~Set out objectives, policies or methods~~ **Set out objectives and policies, and may include methods (sub Transpower Sub 37.1, 38.1)** in district plans that recognise the local, regional and national benefits of renewable energy supply, including security of supply, providing for electricity capacity, and assisting in meeting international climate obligations.

Principal reasons and explanation

Ensuring a secure supply of energy will assist the region in providing for its social, economic and cultural well-being as well as the health and safety of the Canterbury community. The policy, does not seek to provide an exhaustive list of the benefits that could arise from renewable energy generation, but does provide those matters that should be given genuine attention when considering new and existing renewable electricity generation activities. The policy and its methods are intended to recognise the importance of a secure supply of energy locally, regionally and nationally.

New generation facilities will have benefits to local areas, the Canterbury region and to New Zealand. Within local areas, benefits may include employment opportunities, the creation of recreation facilities and opportunities for environmental compensation. Regional and national benefits come from a more secure supply of energy that can service economic growth and community resilience.

Any encouragement of renewable energy sources within the region, should not seek to downplay the importance of biophysical and community held values as associated with locations that may be sought for renewable energy generation. Values such as the importance of outstanding landscape areas, and areas of significant indigenous vegetation and habitat should be considered alongside the benefits of the renewable energy source that could otherwise be generated.

Policy 16.3.4 – Reliable and resilient electricity transmission ~~high-voltage~~ (sub Mainpower 14.8) network within Canterbury

To encourage a reliable and resilient national electricity transmission network ~~high-voltage network~~ within Canterbury by:

- (1) having particular regard to the local, regional and national benefits when considering operation, maintenance, upgrade or development of the electricity transmission ~~high-voltage~~ network;
- (2) avoiding subdivision, use and development (sub Transpower NZ 38.13), including urban or semi urban development patterns, which would otherwise limit the ability of the national electricity transmission ~~high-voltage~~ network to be operated, maintained, upgraded and developed;
- (3) enabling the operational, maintenance, upgrade, and development of the national electricity ~~high-voltage~~ transmission (sub Mainpower 14.8) network provided that, as a result of route, site and method selection, where:
 - (a) the adverse effects on significant natural and physical resources or cultural values (sub Ngai Tahu 98.165) are avoided, or where this is not practicable, remedied or (sub Solid Energy 16.23) mitigated; and
 - (b) other adverse effects on the environment are appropriately controlled.

This policy implements the following objective:

Objective 16.2.1 and Objective 16.2.2 (Transpower NZ 38.13)

16.3.4 Methods

The Canterbury Regional Council:

Will

- (1) ~~Set out objectives, policies or methods~~ **Set out objectives and policies, and may include methods** (sub Transpower Sub 37.1, 38.1) in regional plans to:
 - (a) avoid activities that impact on the efficient functioning of the existing national electricity transmission network, including, through consultation with the operator of the national electricity transmission network, identifying appropriate buffer corridors within which it can be expected that sensitive activities will generally not be provided for; and
 - (b) enable the operation, maintenance, upgrade and development of the national electricity transmission network, within the beds of lakes and rivers and in the coastal marine area, while avoiding or mitigating adverse effects on the environment referred to in Policy 16.3.4(3)(a)-~~(b)~~ above and appropriately controlling other adverse effects **as referred to in Policy 16.3.4(3)(b)** (sub Transpower 38.16).

Should

- (2) Advocate to, cooperate, coordinate and participate with territorial authorities and the national electricity transmission network operators to achieve Policy 16.3.4, including facilitation of long-term planning for investment in transmission infrastructure and its integration with land-uses.

Territorial authorities:

Will

- (3) ~~Set out objectives, policies or methods~~ **Set out objectives and policies, and may include methods (sub Transpower Sub 37.1, 38.1)** in district plans that:
- (a) avoid **subdivision, land-uses and development (sub Transpower 38.26)** that may result in adverse reverse sensitivity effects on the national electricity transmission network, including, through consultation with the operator of the national electricity transmission network, identifying appropriate buffer corridors within which it can be expected that sensitive activities will generally not be provided for; and
 - (b) enable the operation, maintenance, upgrade and development of the national electricity transmission network, while avoiding, or where this is not practicable, mitigating adverse effects on the environment referred to in Policy 16.3.4(3)(a)-(b) above and appropriately controlling other adverse effects **as referred to in Policy 16.3.4(3)(b). (Transpower 38.16)**.
- (4) Use iwi management plans to assist in the identification of adverse effects on ancestral lands and sites of significance to Ngāi Tahu. (sub Ngai Tahu 98.16)**

Local authorities:

Should

- ~~(4) Use iwi management plans to assist in the identification of adverse effects on ancestral lands and sites of significance to Ngāi Tahu.~~
- (5) Work together to adopt a consistent approach in relation to cross boundary issues for the high voltage **electricity transmission** network. **(sub Mainpower 14.8)**

Principal reasons and explanation

The national electricity **transmission** ~~high-voltage~~ network makes important contributions to the sustainable management of natural and physical resources including by enabling people's economic and social well-being, health and safety. Specifically, the benefits of the electricity **transmission** ~~high-voltage~~ network include those benefits defined in Policy 1 of the National Policy Statement on Electricity Transmission. **(sub Mainpower 14.8)**

Over time, considerable public and private investment has occurred in developing, maintaining and upgrading the national electricity transmission network. It is not reasonably foreseeable that these systems will become redundant or be replaced. It is important that land-use does not adversely impact on the efficient operation and development of this network.

The National Environmental Standards for Electricity Transmission Activities provides regulations that categorise activities that relate to the operation, maintenance, upgrade, relocation or

removal of existing transmission infrastructure. These regulations control the activity status for a range of activities relating to transmission infrastructure.

New electricity infrastructure associated with the national electricity transmission network can have adverse effects on the environment, including areas of cultural significance to Ngāi Tahu. These adverse effects can be minimised by appropriate route, site and method selection.

Policy 16.3.5 - Efficient, reliable and resilient electricity generation within Canterbury

To encourage recognise and provide for (sub EECAA 27.65) efficient, reliable and resilient electricity generation within Canterbury by:

- (1) avoiding resource subdivision, use and development (sub Transpower 38.25), which limits the ability of the generation capacity from (sub Genesis 44.75) existing or consented (sub Trustpower 26.62) electricity generation infrastructure to be used, upgraded (sub Genesis 44.75) or maintained;
- (2) enabling the upgrade of existing, or development of new electricity generation infrastructure, with a particular emphasis on encouraging the operation, maintenance and upgrade of renewable electricity energy generation activities and associated infrastructure:(sub EECAA 27.65):
 - (a) having particular regard to the locational (sub Mainpower 32.36), functional, operational or technical constraints that result in renewable energy electricity generation activities being located or designed in the manner proposed (sub EECAA 27.65);
 - (b) provided that, as a result of site, design and method selection,
 - (c) the (sub EECAA 27.65) adverse effects on significant natural and physical resources or cultural values (sub Ngai Tahu 98.165) are avoided, or where this is not practicable, remedied, mitigated or offset (sub EECAA 27.65); and
 - (d) other adverse effects on the environment are appropriately controlled, ~~including whether best practice approaches in design and construction are being adopted.~~ (sub EECAA 27.65)
- (3) providing for activities associated with the investigation, identification and assessment of potential sites and energy sources for renewable electricity generation (sub Trustpower 26.62);
- (34) maintaining the generation output and (sub EECAA 27.65) enabling (sub Genesis 44.75) encouraging the maximum electricity supply benefit to (sub Genesis 44.75) be obtained from the existing electricity generation facilities within Canterbury, where this can be achieved without creating resulting in (sub Meridian 42.190) additional significant adverse effects on the environment which are not fully offset or compensated (sub Meridian 42.190).

This policy implements the following objective:

Objective 16.2.2.

16.3.5 Methods

The Canterbury Regional Council:

Will

- (1) ~~Set out objectives, policies or methods~~ **Set out objectives and policies, and may include methods (sub Transpower Sub 37.1, 38.1)** in regional plans to:
- (a) avoid activities on the beds of lakes and rivers, **and uses and developments** that impact on the ~~efficient~~ **generation capacity from, and / or the maintenance and upgrading** ~~functioning~~ **(sub Genesis 44.75) of consented and** ~~the~~ **(sub TrustPower 26.62)** existing electricity generation infrastructure;
 - (b) **provide for the full operation, and maintenance and/or upgrading of, existing generation infrastructure (sub Genesis 44.75);**
 - (c) **provide for activities associated with the investigation, identification and assessment of potential sites and energy sources for electricity generation; (sub Genesis 44.75) and**
 - (b) enable the upgrading of existing and establishment of new electricity generation infrastructure within the coastal marine area and in the beds of lakes and rivers, while avoiding, **remedying** or mitigating the adverse effects referred to in Policy 16.3.5(a) ~~above and controlling other adverse effects,~~ **(sub Genesis 44.75)** including through the use of best practice approaches to design, construction and effect management.

Should

- (2) Advocate to, cooperate, coordinate and participate with territorial authorities and electricity generators to achieve Policy 16.3.5.

Territorial authorities:

Will

- (3) ~~Set out objectives, policies or methods~~ **Set out objectives and policies, and may include methods (sub Transpower Sub 37.1, 38.1)** in district plans to:
- (a) avoid land-uses that may result in adverse reverse sensitivity effects on the existing electricity generation infrastructure; and
 - (b) enable the upgrade of existing and establishment of new electricity generation infrastructure, while avoiding or mitigating the adverse effects referred to in Policy 16.3.5(2)(a)-(b) above and controlling other adverse effects.
 - (c) Provide for activities associated with the investigation, identification and assessment of potential sites and energy sources for renewable energy generation.
- (4) Use iwi management plans to assist in the identification of adverse effects on ancestral lands and sites of significance to Ngāi Tahu (sub Ngai Tahu 98.165).**

Local authorities:

Should

- ~~(4) Use iwi management plans to assist in the identification of adverse effects on ancestral lands and sites of significance to Ngāi Tahu.~~

Principal reasons and explanation

Electricity generation infrastructure makes important contributions to people's economic and social well-being, health and safety.

Over time, considerable public and private investment has occurred developing, maintaining and upgrading the electricity generation infrastructure. **These generation facilities, particularly the large hydroelectricity generation facilities of the Waitaki and Tekapo Power Schemes and Lake Coleridge are nationally important physical resources which should be provided for.** (sub Genesis 44.75) It is not reasonably foreseeable that this infrastructure will become redundant or be replaced. It is important that land-use does not adversely impact on the efficient operation and development of the electricity generation infrastructure.

Electricity generation infrastructure can have adverse effects on the environment, including areas of cultural significance to Ngāi Tahu and the relationship that Ngāi Tahu have with resources, and particularly with water. These adverse effects can be minimised by appropriate location and design.

16.4 ANTICIPATED ENVIRONMENTAL RESULTS

- (1) Canterbury's energy supply will be more diverse, with a greater proportion of renewable energy supply **based on using a greater variety of renewable energy sources.** (sub Meridian 42.193)
- (2) Canterbury's energy supply will be more secure through diverse supply and better demand management.
- (3) The adverse effects of the production, distribution and use of energy will be minimised.
- (4) There is greater use of small-scale distributed energy production.
- (5) Energy demand is managed through appropriate design and location of development.
- (6) The national electricity high-voltage network traversing Canterbury will be protected.