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## **5 ENERGY**

### **5.1 RESOURCES, ACTIVITIES AND VALUES**

Waitaki District, like the rest of the country, is largely reliant on non-renewable energy resources, such as oil, for the carrying-out of the wide range of activities throughout the District. This is particularly so in the area of transportation, industry and the use of mechanical equipment of farms. The District does contain six hydro-electric power stations based on the renewable water resource of the Ohau and Waitaki River systems. By far the majority of this hydro generated electricity is exported from the District via the National Grid.

Most of New Zealand's increasing energy demand is currently being met by fossil fuels, oil, gas, and hydro-electricity. Although we have enough energy to meet our present needs, this will not necessarily be the case in the future. The fossil fuel resources used in New Zealand are finite. As their availability worldwide decreases and New Zealand uses up its own reserves, their cost will inevitably increase. Activities dependent on the use of fossil fuels will be vulnerable to their lack of availability and price rises. However, the likelihood of this causing difficulties for New Zealand in the foreseeable future will be affected by the extent of any new discoveries of fossil fuels on New Zealand and the extent to which alternative sources of renewable energy such as windpower become viable.

Energy consumption is an integral part of the functioning of the majority of activities in the District, which are dependent on the continuing availability of fossil fuels for transportation, manufacturing, processing, heating, farm and forestry production, amongst other activities. In New Zealand, the largest consumers of energy are industry, followed by transportation. Demand for transportation energy is increasing and, like most industry, the transport sector is largely inflexible about the energy sources it uses.

Increasing emission of greenhouse gases into the atmosphere is being linked to global climatic changes. The two most significant greenhouse gases are carbon dioxide and methane. Most carbon dioxide emissions from human activities come from fossil fuel burning, particularly from transportation and electricity production in the large thermal power stations. Methane emissions are almost entirely from livestock, with a small proportion from landfills and fossil fuel use. Due to the complexity of the earth's biological and physical interrelationships, the effects of climate cannot be precisely predicted. However, the possible effects on New Zealand are:

- temperature rises;
- increased westerly winds;
- changes to rainfall patterns;
- increased likelihood of drought on the east coasts;
- sea level rises;
- greater extremes in climatic events.

### **5.2 ISSUE 1- Efficient Use**

**The conservation and efficient use of energy resources so that the adverse effects of energy production and use are avoided or mitigated and the needs of future generations can be met.**

The Resource Management Act requires the Council to sustain the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations and to avoid adverse effects of activities on the environment. The Council must also have regard to the efficient use and development of natural and physical resources, including energy.

Sustainable energy resources are likely to be important for the needs of future generations to be met.

The efficient use of energy resources now will assist in making them last as long as possible, improve their availability for future generations, and allow time for the development of more sustainable, renewable energy sources. In recognition of the future costs and scarcity of energy resources and the environmental effects of energy use, there is an increasing awareness of the need for energy efficiency and conservation and the use of renewable energy resources, such as solar energy.

As existing energy resources in New Zealand reach their capacity and the limits of their reserves, there will be pressure for the exploration of new energy sources, such as the sites for the construction of new hydro-electricity stations. This can result in adverse effects on the environment such as loss of habitats, land and recreational resources.

Increasing car ownership and distances travelled are being recorded in New Zealand. The location of land use activities can directly influence the numbers and lengths of vehicle trips taken or the likelihood of public or shared transport being feasible, with consequent effect on the amount of fossil transport fuels being consumed.

A reduction in the burning of fossil fuels has also been identified by the government as the most effective method of reducing greenhouse gas emissions. Local authorities can influence this reduction and lead by example through policies for the use of fuel in the Council's own vehicles, buildings and services, through its waste management policies and through community education.

The management of the country's energy resources is principally directed through government policy and may be the subject of national policy statements under the Act. However, the Council has a responsibility to address local energy issues and to adopt methods that will encourage increased efficiency in energy use, energy conservation and the use of renewable energy sources. The Council has limited powers to achieve this, but there are some methods which will assist, albeit to a small degree. The location and design of land uses can be important in reducing the numbers and lengths of vehicle trips or improving the accessibility of buildings to sunlight. Land use patterns can be developed over time, which are amenable to new options of energy use in the future, such as increased use of public transportation systems.

### **5.2.1 Objective**

**The conservation and efficient use of energy within the Waitaki District.**

### **5.2.2 Policies**

- 1 To promote compact urban and peri-urban forms, which assists in reducing the length of and need for vehicle trips and increases the likelihood of the use of public or shared transport.*
- 2 To promote the compact location of community, commercial, service and industrial activities within urban areas, which assists in reducing the length of and need for vehicle trips.*
- 3 To require residential sites to be large enough to enable buildings to be constructed to take the greatest advantage of renewable solar energy for heating.*

- 4 *To control the location of buildings and outdoor living areas to reduce impediments to access to sunlight.*
- 5 *To promote increased awareness of the need for energy conservation and efficient use of energy resources.*
- 6 *To adopt fuel conservation strategies in relation to the design and operation of the Council's vehicles, buildings and public services.*
- 7 *To promote, through its waste management strategy, reductions in waste generation and efficient waste management techniques.*
- 8 *To encourage the retention of remaining areas of indigenous forest vegetation within the District and to limit restrictions affecting exotic forestry plantings to those necessary to avoid, remedy or mitigate adverse effects on the environment.*
- 9 *To recognise the existing Waitaki hydro-stations and to provide for their ongoing use.*
- 10 *To provide for the establishment, operation, maintenance, enhancement, upgrade, and development of electricity generating activities in the district while ensuring that adverse effects on the environment are avoided, remedied or mitigated.*

### **5.2.3 Implementation Methods**

To achieve policies 1 - 10 through:

- 1 provision of rules to control site sizes for residential units, shading of adjoining properties and orientation of outdoor living areas;
- 2 zoning and the delineation of defined zone boundaries to ensure compact urban and peri-urban forms and the compact location of community, commercial, service and industrial activities;
- 3 allocating Council resources to:
  - a) promote the dissemination of information regarding energy conservation, the efficient use of energy and waste reduction, in a form that can be understood and be useful to the community;
  - b) investigate and undertake improvements that can be made to the energy efficiency of the operation of the Council's vehicle fleet, building and service facilities.
- 4 the use of Scheduled Activities in the Rural S Zone to recognise the operation, maintenance and upgrade of the existing Waitaki hydro-scheme.

### **5.2.4 Explanation and Reasons**

The Council has limited influence over the total consumption of energy resources within the District as the management of the country's energy resources is principally directed by national government policy. The Council can, however play its part in assisting with public education and promotion regarding the long-term need for energy conservation and efficient use of energy resources.

The Council's main area of influence with respect to energy conservation relates to the location and design of land-use activities, subdivisions and buildings. The location of land-use activities relative to one another can be a significant determinant in the length and number of vehicle trips undertaken. Trips between home and work, school, community and

commercial activities, for example, can be reduced if these activities are in close proximity to each other or at least grouped together. In a rural area, such as the Waitaki District, it is physically possible for activities to be spread over a large area of the District. The Council's policies seek to keep as compact a form as possible to the District's urban areas; to the location of those activities that need to cluster around the urban areas in the peri-urban area; and to the community and business centres within the District.

The location and design of sites and buildings can also assist in ensuring there are no impediments to access to solar energy. The size of sections created on subdivision can ensure that there is ample space available on the site for the construction of a building that can take the greatest advantage of the available solar energy. Difficulties with the variable size and shape of existing sections and areas of land available for subdivision make it impracticable to require the design of subdivisions and buildings to achieve a prescribed orientation to the sun. However, guidelines will be used to provide information about the opportunities available.

The Council also has the ability to lead by example, being a major energy user within the District. Fuel efficiency by Council vehicles can be addressed through fuel type, vehicle size and maintenance. An energy management programme for Council- owned buildings could address matters such as insulation, heating, cooling and lighting levels, and the use of improved technology to reduce energy consumption. This could also include Council services, including street and recreational lighting, pumping systems and swimming pool operation.

Forests may be important "sinks" which trap and breakdown greenhouse gases. Rural Districts, such as Waitaki are the most likely location for future carbon "sinks". Through its policies, the Council seeks to remove any unnecessary hurdles to the planting of exotic forestry and to ensure that as much remaining indigenous forest as possible is retained.

Due to the significant contribution the Waitaki hydro-stations make to the overall hydro-electric power generation in New Zealand, it is appropriate that they be provided for so that they can continue to operate.

## **5.3 ISSUE 2- Nuclear Power Generation**

### **Environmental risk associated with nuclear power generation**

Although the risk of nuclear power station accidents are very low the potential consequences could be enormous through radiation fall-out. Further, the safe long-term disposal of radioactive waste is difficult and may pose a long-term threat to the environment.

#### **5.3.1 Objective**

**Avoiding nuclear fission as a means of producing energy.**

#### **5.3.2 Policies**

- 1 To prohibit nuclear power generation as a means of producing energy so that the potential for significant adverse effects is avoided.*

### **5.3.3 Implementation Methods**

To achieve policy 1 through:

- 1 the provision of rules to prohibit nuclear power generation - refer to Chapter 16 Hazardous Substances.

### **5.3 Explanation and Reasons**

Consistent with the Regional Policy Statement for the Otago Region, the establishment of nuclear power plants shall be prohibited.

## **5.4 ENVIRONMENTAL RESULTS ANTICIPATED**

- More efficient use of energy in the operation of the Council's vehicles, buildings and facilities.
- Progressively increasing efficiency in the use of energy for development and transportation.
- Progressive reduction in air pollution.
- Progressive reduction in carbon dioxide emissions.
- Minimising the need for, and travel distance of, vehicle trips.
- Reduction of waste being disposed of as a result of efficient waste management techniques.
- Avoidance of nuclear power generation.



