

Energy

Anticipated environmental outcomes

Energy efficiency

- Subdivision and development design that makes use of opportunities for energy efficiency
- Enhanced opportunities for making use of alternative forms of transport
- More efficient consumption of non-renewable resources.

Renewable energy

- Greater generation and use of renewable energy resources.

Executive Summary

The purpose of section 7 of the Resource Management Act 1991 (RMA) is to promote the sustainable management of all resources, including energy. The RMA requires our district plan to have particular regard to the benefits derived from the use and development of renewable energy. There is a global trend emerging for reliance on less traditional and more renewable energy resources such as solar, wind, biofuel, wave and tidal energy. Within the Waikato district we are also following this trend.

The energy portfolio within the district has in recent times, diversified, to include both traditional non-renewable energy sources such as coal which has always been a dominant source of energy and staple for our economy and less traditional renewable energy, predominantly wind and natural gas.

Background

As described by the Waikato Regional Energy Strategy 2009, “the Waikato region is rich in energy resources”. The region is New Zealand’s premier electricity province, with almost 40 per cent of installed generation capacity, and the potential to generate up to 50 per cent of New Zealand’s total electricity when required. In addition, the Waikato region has major energy resource potentials in coal, biomass, geothermal, wind and wave (Waikato Regional Energy Strategy 2009), with the Waikato district being a significant reservoir for a number of these sources.

There has been an increased focus on the energy efficiency in New Zealand recently as a result of increasing energy prices, concerns about supply and about climate change impacts from fossil fuel use. This has led to a requirement for increased renewable energy nationally and is at the forefront of policy changes with Central Government announcing a 2025 90 per cent renewable energy target. The New Zealand Energy Strategy (NZES), New Zealand Energy Efficiency and Conservation Strategy (NZECC) and the renewable electricity target outline the government’s strategies for achieving this goal, while the New Zealand Coastal Policy Statement recognises that the coastal environment contains renewable energy resources of significant value that can provide social, economic, and cultural benefits for people and communities.

The proposed Waikato Regional Council Regional Policy Statement (RPS) provides governance as to the way in which Waikato District Council approaches energy management and takes into account relevant changes to legislation that drive this approach. The focus of the RPS is on the efficient use of energy, recognising that this is a key approach for managing the increasing demand for energy resources. The Waikato district has been subject to a recent drive towards renewable resources.

Pressure

Population growth

Over the next ten years the projected population growth for the Waikato district is estimated to be 18.6 per cent or 1.7 per cent per annum. Over the past 20 years the population growth has averaged 1.2 per cent, with the past five years being at 2 per cent. This latter increase has been in the non-urban areas consistent with higher demand for countryside living and rural residential sections, following the trend of people moving away from the cities such as Auckland and Hamilton. As detailed below, this trend is likely to remain relatively constant.

	2012	2022	Change
Estimated population	65,114	77,331	12,217
Estimated dwellings	23,240	27,975	4,735
Estimated urban/rural mix	47/53	49/51	

Note: These growth estimates are from our detailed population modelling prepared in conjunction with the National Institute of Demographic and Economic Analysis and includes base information from the 2006 census. The 2010 census was postponed because of the Canterbury earthquakes.

The census Usually Resident Population (URP) counts show that Waikato district is in the top ten territorial authority areas with an increase of population from 2006 to 2013 of 10.1% (Statistics New Zealand). The URP counts as detailed below show that the estimated population count for the district in 2013 is below the 2012 estimate and would not have taken into account the boundary change with the creation of Auckland Super City (incorporation of Franklin District).

	2001	2006	2013
Usually Resident Population	51,843	57,585	63,378

As the population grows, so too does the demand for land and as a result development may encroach on areas that are subject to natural hazards and may have not otherwise been considered. This does not come without its challenges and careful management is required to ensure that areas subject to natural hazards are avoided or the potential adverse effects are mitigated.

Financial constraints

Financial constraints play a major role in people making improvements to enhance their energy efficiency. Often available options require an initial outlay that will eventually be offset but this can be unachievable for the general population. Waikato District Council assists where possible through the development of linkages and cycle ways, allowing for more cost effective and energy efficient transportation.

Lack of knowledge Many people remain unaware of the cumulative effects of their actions with regard to energy consumption. Financial implications of use are one driver to promote energy efficiency, however, there are many other ways in which households and businesses can promote improved energy efficiency, if only people were more aware of the available options.

State

Hampton Downs landfill gas conversion

The Hampton Downs landfill is a prime example of using natural gas as a renewable resource. Methane is a natural byproduct of the fermenting process when bacteria break down organic matter. This can lead to problems in a landfill situation where highly combustible methane builds up to levels that can cause spontaneous explosions without careful management. In the case of Hampton Downs however, this gas has been put to good use. An extraction system has been installed within the landfill which takes off the gas, then chills and filters it to remove moisture and particulate. The gas is then reheated and goes either to engines, electricity generation or to the flare on site, if gas is produced in excess.



Image courtesy of Contrafed publishing

Wind turbines

The generation of power through harnessing renewable wind energy became established in New Zealand in the 1990s. Since this time wind power generation has grown rapidly and now accounts for 5 per cent of the country's electricity.

In June 2008, Contact Energy filed a resource consent application to develop a wind farm on the west coast of the North Island in the Waikato region. The final approvals for this project were granted in 2011.

The resulting wind farm will extend 34 km along the coast between Port Waikato and Raglan and will have the capacity to produce enough energy to power an equivalent of 180,000 homes per year.



Image courtesy of en.wikipedia.org

The Huntly Power Station

The Huntly Power Station is the largest thermal power station in New Zealand and is located in the town of Huntly in the Waikato. It is operated by Genesis Power, a state-owned enterprise, and supplies around 17 per cent of the country's power. The plant has four original generating units, which are capable of burning coal, gas, or both, to generate electricity and was upgraded in 2004 and 2007 to increase the generating capacity. The majority of the energy generated at Huntly Power Station is transmitted through the national grid to Auckland.

Power stations and other industries that burn fossil fuels release CO₂ and N₂O. Huntly Power Station produced about 3.26 million tonnes of carbon dioxide in 2001 (Waikato Regional Council 2013) making the plant one of the biggest carbon dioxide greenhouse gas generators of the country, contributing over half of New Zealand's emissions of greenhouse gases from electricity generation

(www.wikipedia.com). Genesis Energy has however made positive improvements to the emissions from the plant since this, with the installation of a new gas turbine in 2008. This upgrade dramatically decreased emissions while increasing output. The Ministry of Economic Development figures showed that for the December following installation, quarter emissions were almost 10 per cent less than a year before despite thermal generation being nearly 17 per cent higher (www.nzherald.co.nz).



Image courtesy of teara.govt.nz

Linkages and making use of alternative forms of transport

Waikato District Council uses various mechanisms, primarily structure planning, to enable forward thinking with regard to the creation of linkages and cycle ways within the district. The council is progressive in this area and continues to promote a cross-departmental approach to encourage sustainable forms of transportation through development.

Response

- Continue to encourage energy efficiency through the design and layout of subdivision and development.
- Continue to encourage the use of different more energy efficient modes of transport through the creation of linkages, cycle ways and good urban design.
- Further support the use of renewable energy resources within the district through planning provisions.