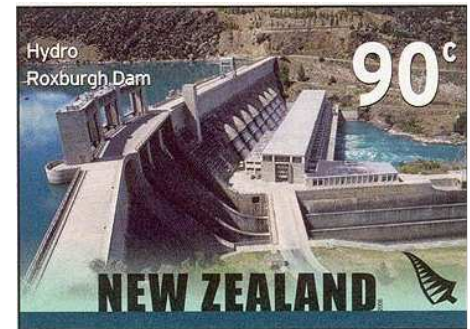




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# Low Carbon Activities in New Zealand Local Government



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Nathan Ross, Team Manager – Renewables, October 2010

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## Agenda

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- NZ energy mix
- NZ local government
- Regional Council case study
  - Environment Waikato
- City Council case study
  - Christchurch City Council
- Other local government actions



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# Section 1:

## NZ's Energy Mix

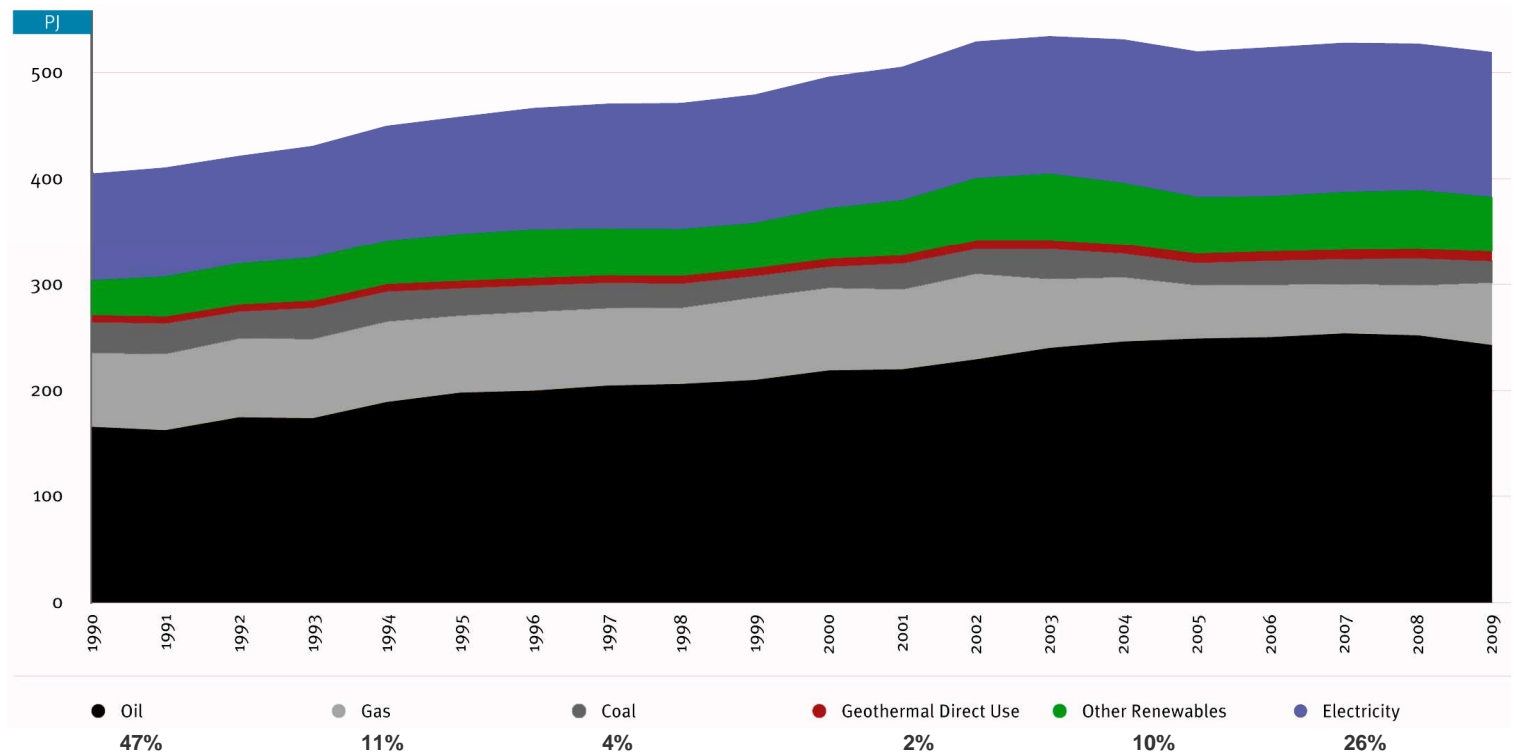
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# Total Consumer Energy by Fuel

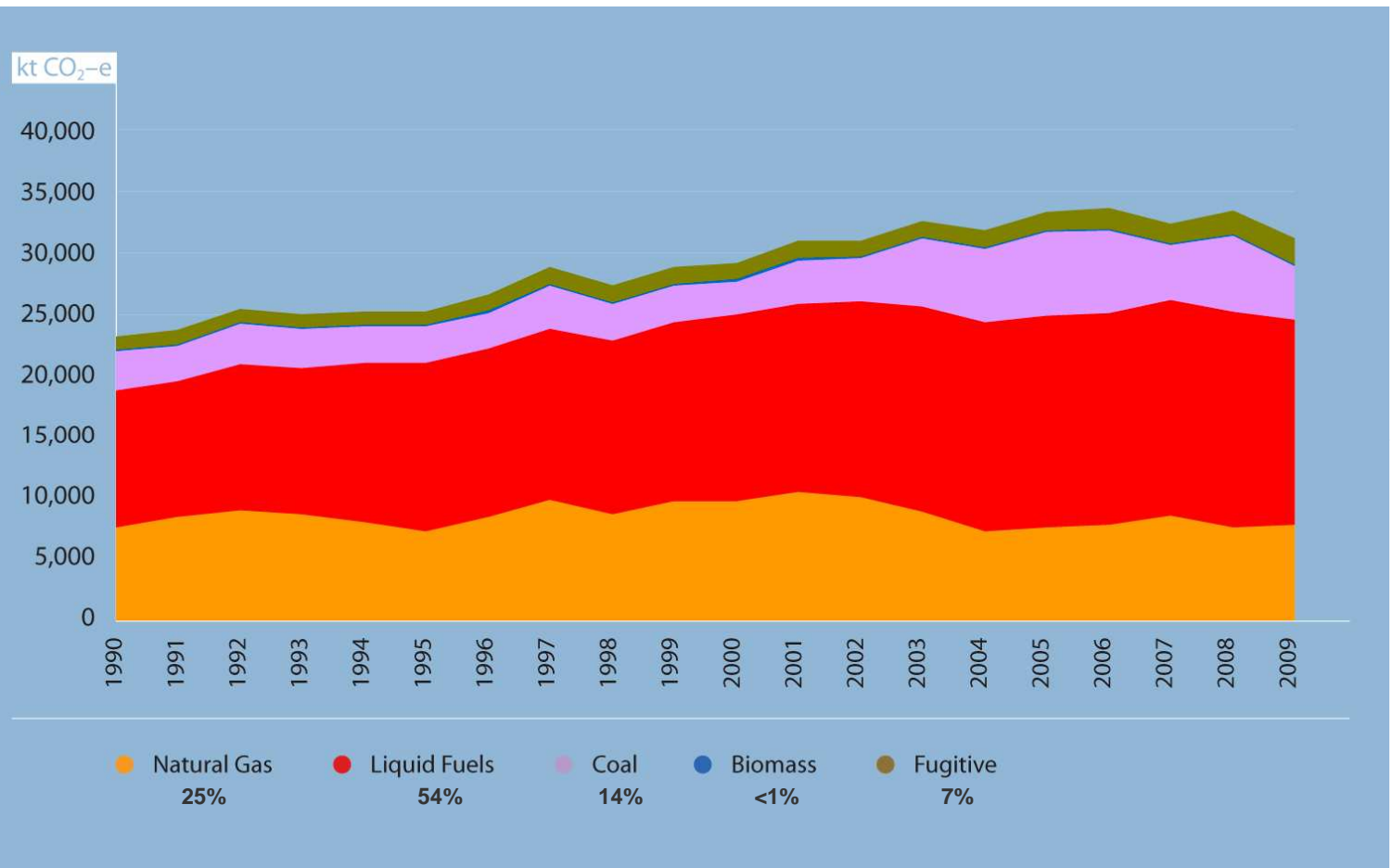


Cogeneration by individual fuel types is included in electricity.  
“Other renewables” refers to wind, bioenergy and solar.



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# Energy Emissions by Fuel Type

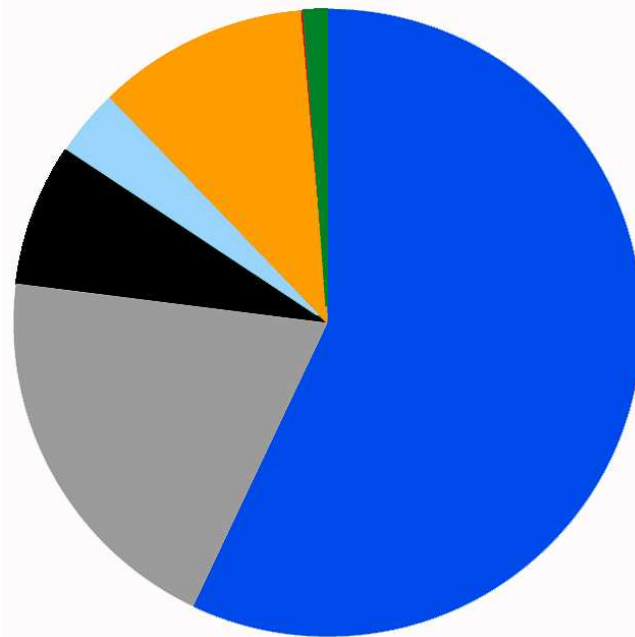




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## Electricity generation by fuel type

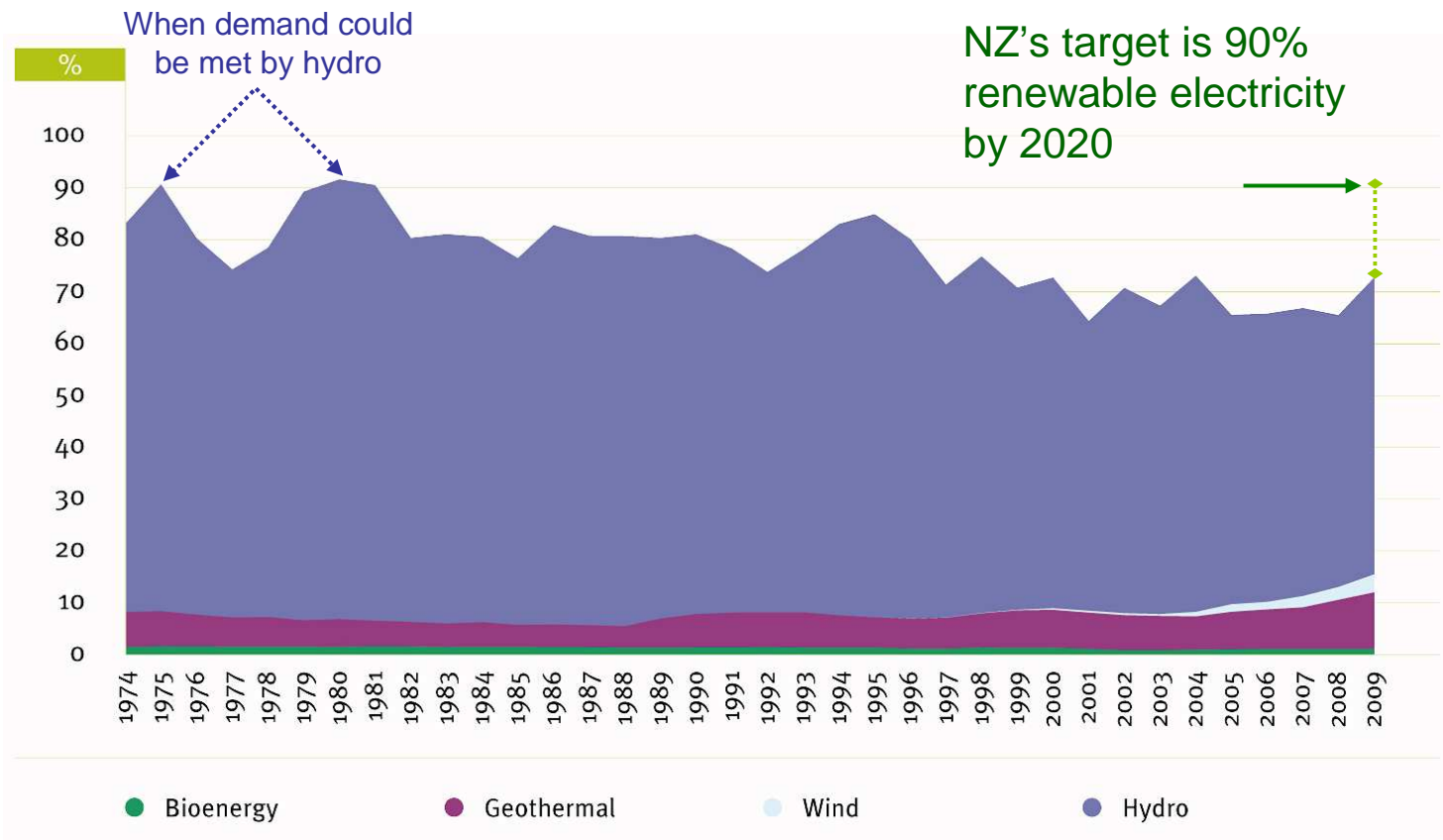
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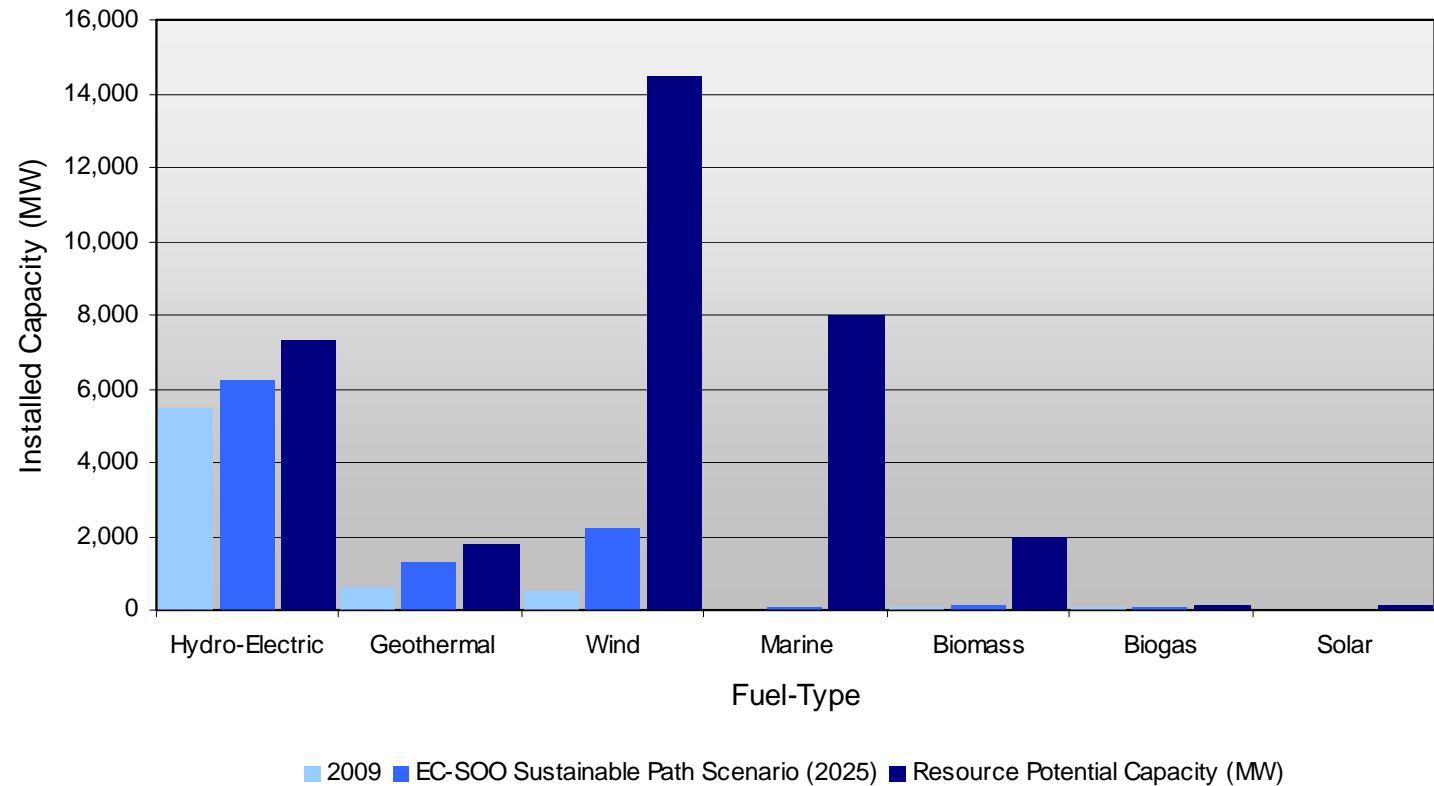
- Hydro 57.0%
- Gas 20.0%
- Coal 7.3%
- Wind 3.5%
- Geothermal 10.8%
- Other Thermal 0.2%
- Bioenergy 1.2%

In 2009, 72.5% of New Zealand's electricity generation came from renewable sources

# Percentage of NZ electricity generation from renewables



# NZ's renewable energy potential

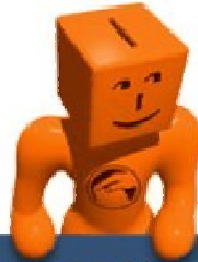


\*Some RES not available for large-scale exploitation for cultural / economic reasons, or because of (current) technical limitations.





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**VOTING**

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## Section 2: Spheres of Government

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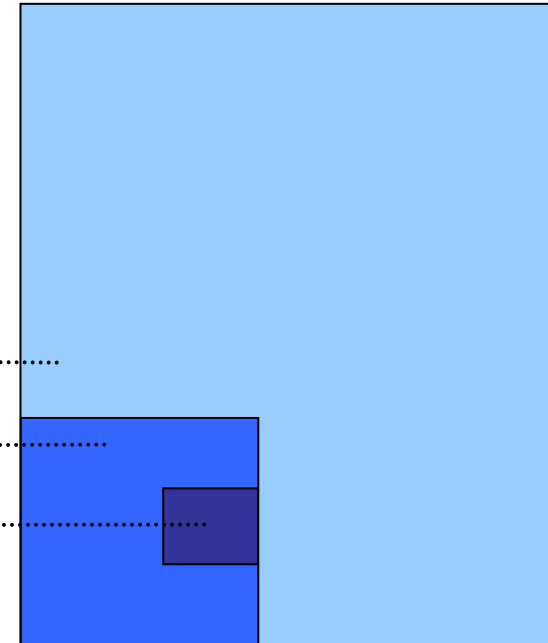
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# Spheres of Government

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(Representation of geographical jurisdictions)

- Central (national) Government .....
- Regional Councils .....
- Territorial Authorities  
(district and city councils) .....





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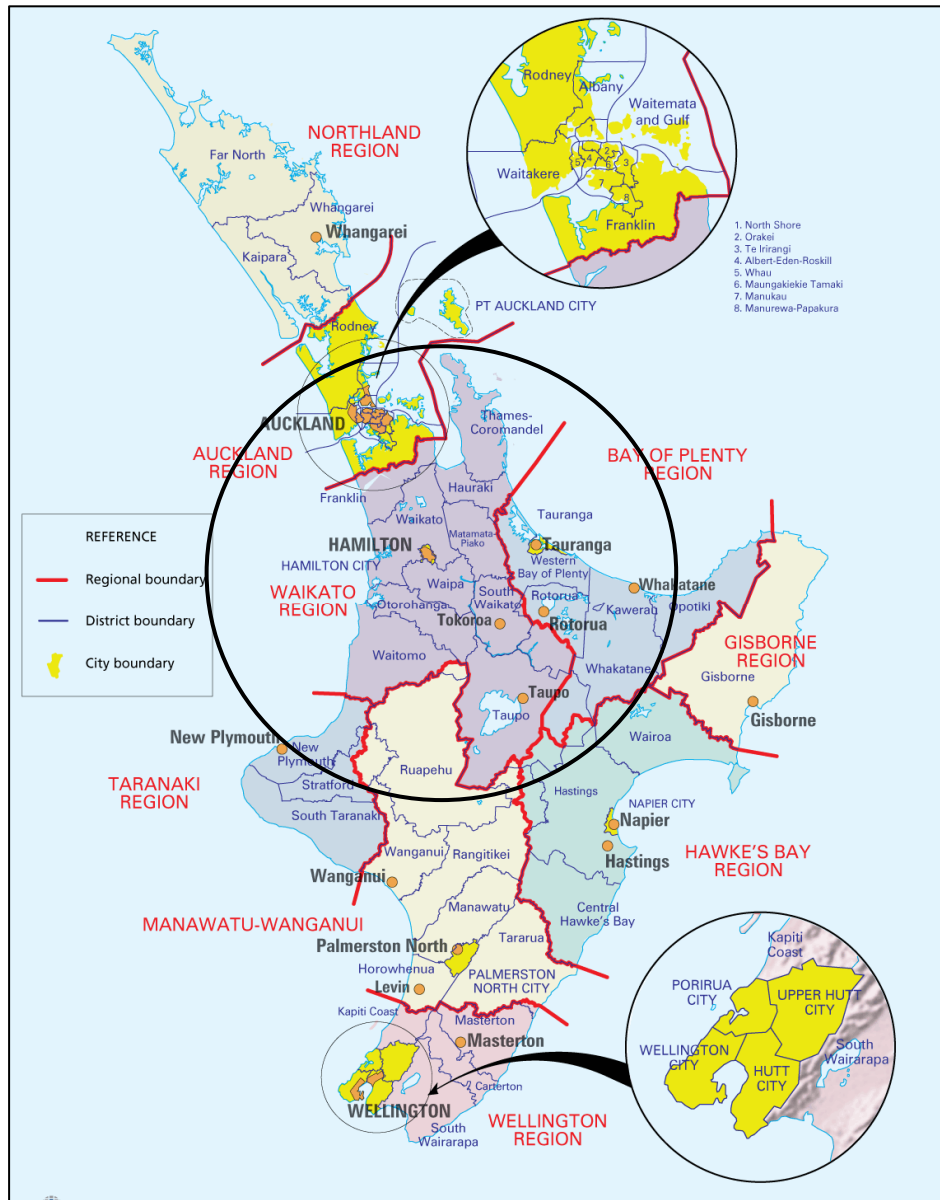
# Case Study 1: Environment Waikato

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# Waikato Regional Council

Pop. 406,000

50% of NZ's electricity generation\*

Significant RES potential: geothermal, wind, biomass

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

\*50% in a dry year, when coal supplements low hydro in-flows

# Environment Waikato Regional Renewable Energy Assessment (July 2006)

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- Found significant potential in geothermal, wind, wave, small-to-medium hydro, ethanol and biomass
- Recommendations included:
  - Develop a Regional Energy Strategy and Regional Policy Statement
  - Make changes to Regional and District Plans to enable development of renewables

# Environment Waikato

## Regional Energy Strategy

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- Developed (2007-2009) by the *Waikato Regional Energy Forum Trust* to:
  - Encourage and enable energy conservation and efficiency
  - Facilitate the development and use of renewable energy sources and innovative energy technologies
- **Recommendations** included using the **Regional Policy Statement** (plus other policies and actions) to support sustainable energy

## What is a Regional Policy Statement?

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- The most significant statutory tool (except National Policy Statements\*) for achieving integrated resource management
- Outlines the significant resource management issues of a region, and the policies and methods to achieve integrated resource management.
- Must be given effect by district, city and regional councils in planning and other functions

\*A National Policy Statement for Renewable Electricity is under development

# Environment Waikato's Regional Policy Statement

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## 2<sup>nd</sup> Generation “Future Proof” RPS

- The Waikato RPS has been designed to provide significant emphasis on sustainable energy, providing clear expectations to help streamline resource consents (*i.e.* development approvals).
- Energy is a critical consideration for all developments and it is a priority above many others, e.g. agricultural demand for irrigation water



# Environment Waikato's Regional Policy Statement

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- Specific energy objectives:
  - Use, generation and transmission managed in ways that:
    - Minimise energy demand
    - Increase efficiency of energy use
    - Recognise the need for renewable energy development
    - Reduce reliance on fossil fuels
    - Address adverse effects on natural and physical resources

# Environment Waikato's Regional Policy Statement

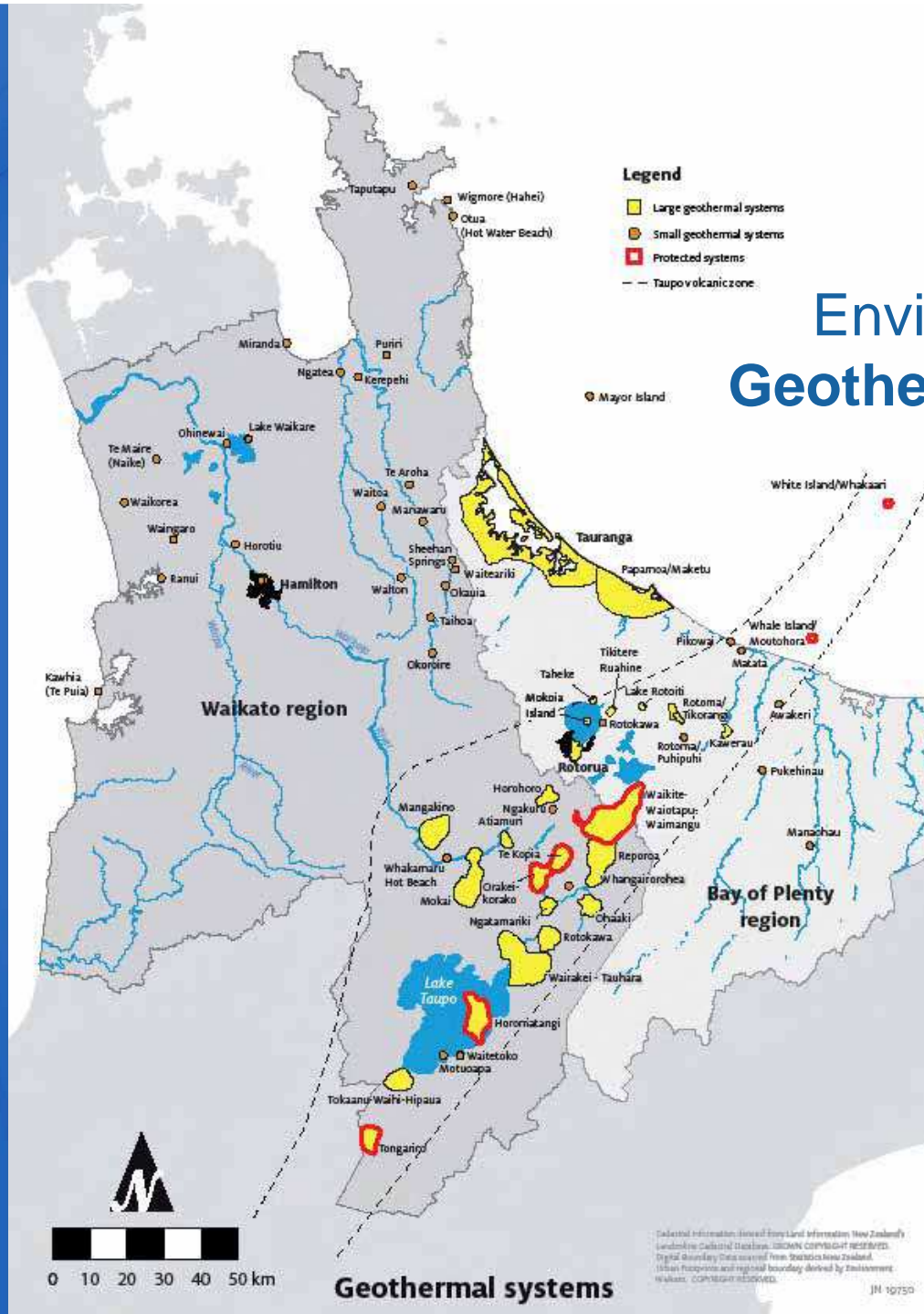
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- Energy objectives also referred to in following sections:
    - Tāngata whenua
    - Planned and coordinated development
    - Planning for development in coastal environment
    - Coordinating growth and infrastructure
    - Significant infrastructure and energy resources
    - Interests in the coastal marine area
    - Allocating fresh water
- ...and more*



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# Environment Waikato Geothermal Resources



# Environment Waikato

## Tangible Outcomes

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### “Greening the Trades”

- Local technical college integrating energy training into
  - Plumbing
  - Electrical
  - Carpentry
  - Drafting
  - Interior design
  - Landscaping and horticulture

# Environment Waikato

## Tangible Outcomes

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### “Greening the Trades”

- Local technical college developing Student Eco-Village
  - Built by trades students
  - Elements of location (orientation), design, materials
  - Trials for technologies and new products
  - Monitoring outcomes, products and behaviours
- Students move in February 2011
- Integration of Energy Strategy and Energy Policy into practical implementation

# Environment Waikato Tangible Outcomes

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## Student Eco-Village





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# Environment Waikato Tangible Outcomes

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## Student Eco-Village



Monitoring Station



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## Case Study 2: Christchurch City Council

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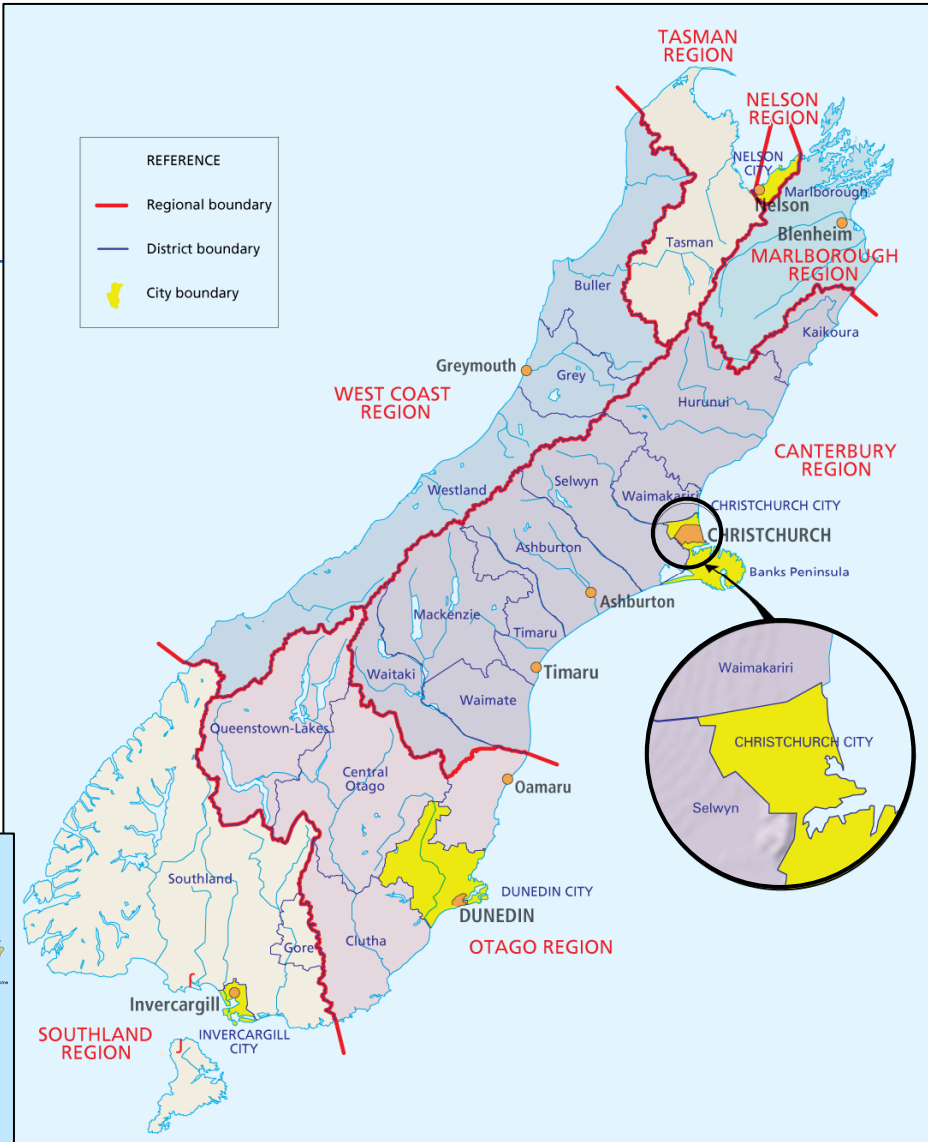
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# Christchurch City Council

Pop. 372,000

National leader in energy management

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





# Christchurch City Council Policy History

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- Climate Change Policy (1995)
- Corporate Environmental Policy (1997)
- Energy Use Policy (2000)
- Supply Chain Sustainability Policy (2003)
- City-wide Renewable Energy Utilisation System (2006)
- Sustainable Energy Strategy (2008-2018)

# Christchurch City Council City-wide Renewable Energy Utilisation System

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Comprehensive, integrated system for using bioenergy:

1. Landfill gas collection and treatment
2. Biogas-fired refrigeration plan for landfill gas treatment
3. 18km network of biogas pipelines and compressor stations
4. Cogen at sports centre and converting heating boilers to biogas
5. Tri-gen plant at the new Civic building, using biogas for generating electricity, heat and refrigeration simultaneously

# Christchurch City Council City-wide Renewable Energy Utilisation System

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Comprehensive, integrated system for using bioenergy:

6. Construction of biosolids dryer to avoid transporting wet biosolids
7. Installation of wood and biogas boilers
8. Converting 6 diesel-fired boilers to 100% biodiesel
9. Plans for replacing landfill gas with digester gas, as landfill gas supply declines



# Christchurch City Council City-wide Renewable Energy Utilisation System

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## 2006-2010 results:

10% to >50%	Proportion of Council's renewable energy use
52,000 T-CO <sub>2</sub> e	Emissions reduced
47.8 GWh	Displaced fossil fuels
700 kW	Peak electricity load reduction



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# Christchurch City Council

## [www.TargetSustainability.co.nz](http://www.TargetSustainability.co.nz)

The screenshot shows the Target Sustainability website. The header features the 'Target Sustainability' logo and a navigation bar with icons for Target Waste, Target Energy, Target Water, Recycling Directory, Case Studies, Services, Sector Guides, Downloads, and Contact Us. A sidebar on the left contains a menu with 'Home' (highlighted in red) and links to Target Waste, Target Energy, Target Water, Recycling Directory, Case Studies, Services, Sector Guides, Downloads, and Contact. The main content area is titled 'Target Sustainability' and includes a paragraph: 'Target Sustainability provides free support to help Christchurch businesses become sustainable through reducing waste and being energy and water efficient.' Below this is a paragraph describing the types of support available, from self-help guides to consultancy services, with a link to 'Target Sustainability consultancy services'. A red 'APPLY NOW!' button is positioned at the bottom right of the main content area. The footer contains the Christchurch City Council logo, contact information (PO Box 237, Christchurch 8140, New Zealand), and links to 'Contact the Council' and 'Terms of use'.

- Free support for businesses to become sustainable
- Toolkits for Energy, Waste and Water
- Tools / Consultancy for audits, actions and monitoring

## Voluntary Targeted Rates

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- Loans through property rates (taxes) for energy efficiency and renewable energy measures
- The loan is tied to the property, not the person
- So the owner / beneficiary of the energy initiative is always the person paying off the capital
- For example:
  - Greater Wellington Regional Council
    - Insulation and clean heating
  - Nelson City Council
    - Insulation, clean heating and solar water heating



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# Energy Improvements after the Canterbury Earthquake (7.1)

## 4 September 2010

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# Energy Improvements after the Canterbury Earthquake

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# Energy Improvements after the Canterbury Earthquake

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Replace chimneys  
damaged in the  
Canterbury earthquake



Find out more >> [www.eeca.govt.nz](http://www.eeca.govt.nz)

- Earth Quake Commission (EQC) helps with cost of repairs for around 100,000 buildings

## **Chimney Replacement Scheme**

- Around 15,000 claims for damage to brick chimneys
- Can now replace old inefficient open fires with high efficiency heating devices – fully paid for by the EQC (coordinated by EECA) – such as pellet burners and heat pumps

# Energy Improvements after the Canterbury Earthquake

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- Cost of repairs and total economic losses estimated at NZ\$4 Billion.
- Opportunities for sustainable energy measures:
  - Residential buildings
    - Passive design
    - Insulation
    - Double-glazing
  - Public buildings and Commercial buildings
    - Passive design
    - Insulation
    - Lighting
    - HVAC
    - Heating
    - Double-glazing

# Energy Improvements after the Canterbury Earthquake

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- What do we need?
  - Expertise
    - To support an Architects Working Group, which is leading the design of reconstruction work of prominent buildings
    - To support the EQC's Project Managers, who are managing the repairs and construction work for thousands of buildings across the region
  - Marketing
    - To explain the opportunities to building owners
  - Cash
    - EQC and insurance covers repairs, not upgrades

## Summary

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- Local Government can play a leadership role – nationally – for supporting low carbon, sustainable energy initiatives
  - Planning / regulation
  - Own / corporate initiatives
  - Facilitator for the community and businesses
  - Specific services



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- [www.eeca.govt.nz](http://www.eeca.govt.nz)
- [www.energywise.org.nz](http://www.energywise.org.nz)
- [www.eecabusiness.govt.nz](http://www.eecabusiness.govt.nz)