



**He Ānga Whakamua**  
*Paving the way forward*

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*Energy - Current and Future Issues*



## Energy – Current and future issues

Presented by Matt Todd (Chief Executive - Eastland  
Group)

Date 09/10/2008

## The Australian Perspective



## Content

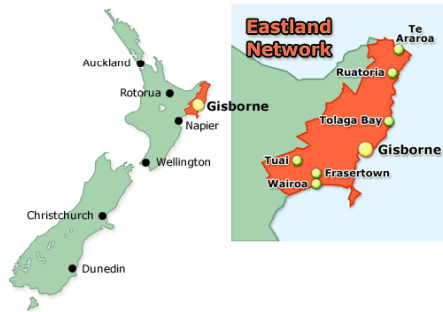
- About Eastland Network
- New Zealand's current energy situation
- Local energy situation
- Energy challenges
- Economic context
- Issues for lines companies in the current regulatory regime
- Government response & initiatives
- Outlook of future generation options
- Summary and conclusions

## About Eastland Network Ltd (ENL)

- ENL is the electricity lines business historically serving the Gisborne district and since 1999 Wairoa district with line function services.
- ENL distributes approximately 303 GWh of electricity to approximately 26,000 consumers, of which approximately 57% are in Gisborne City and Wairoa Township.
- The remaining connections are scattered widely, across two isolated distribution networks covering 11,952km<sup>2</sup>, resulting in an overall line density of less 6.8 connections per kilometer of line (national average 11.3)
- Average consumption is 11,600kWh (national average 16,400kWh)
- ENL is 100% trust-owned by the Eastland Community Trust with the GDC as the capital beneficiary and Gisborne consumers as revenue beneficiaries

ENL is a low density, and low average consumption network.

## ENL's Geographic Area of Coverage



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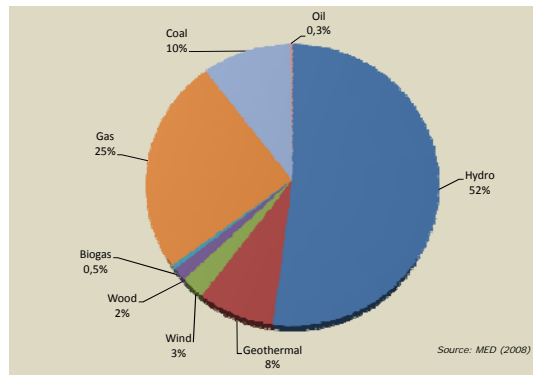
## NZ's Energy Situation in Brief

- Strong reliance on hydro (52%)
- Gas is second largest electricity generator with Maui being the main gas field of supply
- Renewable resources contribute to 2/3 of supply
  - Government's energy strategy sets a target of 90% renewables in electricity generation by 2025

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## NZ's Electricity Generation in 2008



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## NZ's Energy Challenges

- Depletion of Maui gas field and as of yet no other gas fields of equivalent size have been found (Maui contributes 20% to the gas supply)
- Analysts predict gas production to last for another 12 years at current production rate of 150PJ per year
- No international electricity trade possible due to geographic isolation
- Price taker on the world market for resources (purchased or sold)
- Exposed to hydro volatility
- Unique geographic situation (e.g. two islands, areas with low population density, difficult land access, long transportation distances)
- To meet expected growth in demand an increase in generation capacity by around 175MW p.a. is necessary
- While meeting increased demand for energy a desire to simultaneously reduce impact on the environment

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## Tairawhiti Already Self Sufficient

Network	Max Demand	Consumption pa
Wairoa	11MW controlled	57GWh
Gisborne	47MW controlled	246GWh
<b>Total</b>	<b>58MW controlled</b>	<b>303GWh</b>

Generation	Max Demand	Owned By	Location
Kaitawa – Hydro	36MW	Genesis Energy	Wairoa
Tuai – Hydro	60MW	Genesis Energy	Wairoa
Piripaua – Hydro	42MW	Genesis Energy	Wairoa
Waihi – Hydro	5MW	Eastland Network	Wairoa
Embedded Diesel	6MW	Eastland Network	Mixed
<b>Total</b>	<b>149MW</b>		

## Wairoa Hydro

Tuai Scheme Estimates	
Max Output	138 MWh
Hours p.a.	8,760
Capacity Factor	70.00%
Output	846,216 MWh
Sell price	\$ 80 MWh
Annual Revenue	\$ 67,697,280

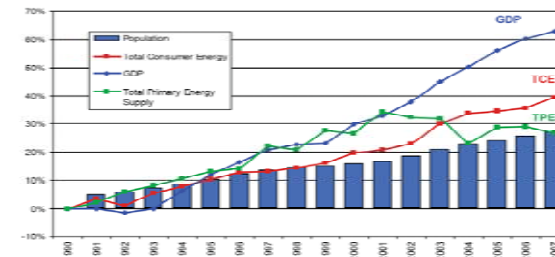
Waihi Scheme Estimates	
Max Output	5 MWh
Hours p.a.	8,760
Capacity Factor	27.50%
Output	12,045 MWh
Sell price	\$ 80 MWh
Annual Revenue	\$ 963,600

Wairoa Total Hydro Output	
Max Output	143 MWh
Hours p.a.	8,760
Capacity Factor	68.51%
Output	858,261 MWh
Sell price	\$ 80 MWh
Annual Revenue	\$ 68,660,880

## Energy Situation for the Region

- Wairoa produces enough hydro electricity to meet Wairoa's demand 16 times and Tairawhiti's demand 2.5 times
- In a sense Tairawhiti is already self sufficient for electricity
- Network requires reinforcement in places and this not always easy e.g. Mahia

## Economic Perspective



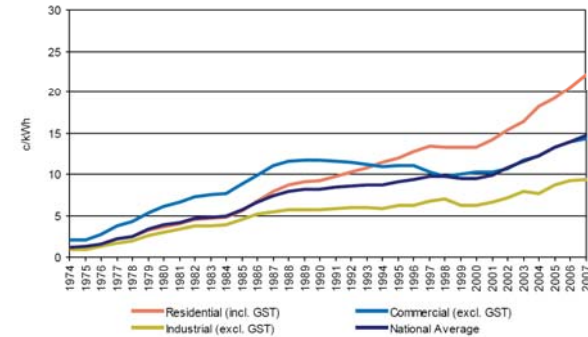
Note: TPES and TCE are presented on a March year basis to allow an accurate comparison with GDP.

Source: New Zealand Energy Data File (MED 2008)

## Economic Perspective

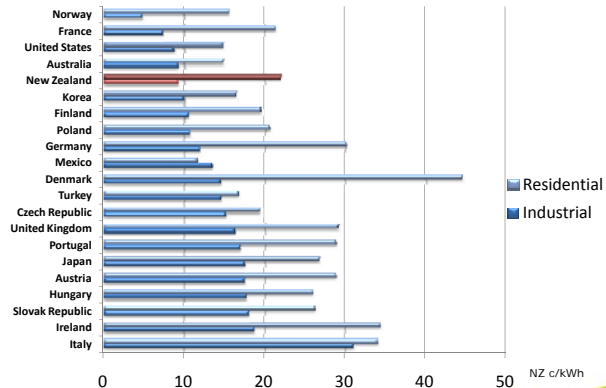
- Interruptions in supply negatively affects national productivity and deters future (foreign) investment into energy intensive consumer goods
  - New Zealand has seen electricity supply shortages in 2001, 2003, 2006 and in 2008
- Even though electricity prices have increased, they are still below OECD average

## National Electricity Prices (nominal)



Source: New Zealand Energy Data File (MED, 2008)

## International Comparison of Electricity Prices in 2007



Source: New Zealand Energy Data File (2008)

## What is Needed and What are the Impediments

### What is Needed

- New generation 175MW p.a.
- New upgraded transmission and distribution infrastructure

### What Are the Impediments

- Poor regulation of electricity industry
  - Commerce Act 1986
  - Electricity Industry Reform Act 1998
- Resource Management Act
- Uncertainty around ETS/Kyoto

## Issues for Lines Companies - I

### Eastland Network - Network

- Commerce Commission set a considerably rigid price path threshold for the period 2004-2009
- Has resulted in ENL's return constantly falling while maintaining its service quality levels
  - In 2007 ROI was 5.7% (We can't borrow money tax adjusted for less than 6.5%)
- Regulatory regime has so far created no incentives to invest
- Network has been managed on the basis of prioritisation
- Uncertainty due to discretion by the regulator
- Prices are artificially low
- Meanwhile the SOE generators/retailers have made large profits

## Issues for Lines Companies - II

### Eastland Network – Generation

- Tried to build a wind farm, but Comm Comm declined the application for exemption from EIRA.
- Resource Management Act – The rights of a few outweigh the needs of the many
  - The NIMBY effect
  - More recently the BANANA effect

## Government Response & Initiatives

Energy Initiatives	Desired Outcome
New Zealand Energy Strategy 2007	Meeting our future energy needs focus on renewable
National Energy Efficiency and Conservation Strategy 2007	Using energy more efficiently, using less, reducing need for more generation
Changes to Parts 4, 4a and 5 of the Commerce Act 1986	Necessary incentives to invest, regulation of monopolies, benefits to consumers
Changes to the Electricity Industry Reform Act 1998	Creating greater ability for lines companies to generate/retail electricity to contribute to growing energy demands
Introduction of the Emissions Trading System	Meeting Kyoto obligations
Proposed NPS for Renewable Electricity Generation	Focus on renewables
Ability to "call in" projects of national importance	The needs of the many outweigh the rights of the few

## Energy Future for the Region

Generation Type	Desired Outcome
Hydro	Hydrology and Geography conspire to make hydro difficult. East Coast flashy hydrology Erosion and sediment a bit issues
Gas	A reasonable gas find would make this a reality. It would be more efficient to burn gas and export as electricity than to build a pipeline to export.
Wind	Wind speeds of class 4 (7.5m/s) or better hard to find Distribution/transmission infrastructure a bottleneck north of Tuai
Biomass (especially woody waste)	Huge potential, 2MWh of energy per tonne of felled radiata pine At 30% yield = 0.6MWh per tonne At \$80/MW = \$48/tonne in saved electricity costs
Geothermal	There are potential sites e.g. Te Puia Springs, Morere Springs
Marine/tidal	Still in R&D stage but worth watching
Solar	Photovoltaic still expensive, solar hot-water heating should be on every new house on the East Coast

## Summary and Conclusions

- New Zealand is facing some unique energy challenges in the mid to long-term which will affect all electricity industry sectors
  - Upgrade of transmission system and local line assets
  - Expansion of generation capacity
  - Meeting environmental targets
- Promising rule changes in the Electricity Industry Reform Act 1998 will allow more flexibility for a company to be involved in generation, distribution and retailing
- New Part 4 in the Commerce Act 1986 has the ability to provide better credibility and certainty for industry parties and also increases flexibility to a certain degree by adopting a more customised approach
- There are opportunities for the Eastland region to position itself well in the market in terms of electricity generation, transmission and retailing
- Wairoa and Gisborne can be self sufficient for electricity energy