

BrightEconomy Advisory Board

Rotorua



Status and Opportunities: Energy Supply in the Rotorua District

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Presentation to Stakeholders

5 June 2007

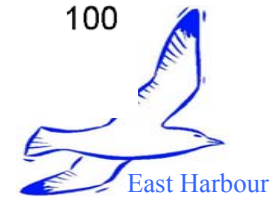
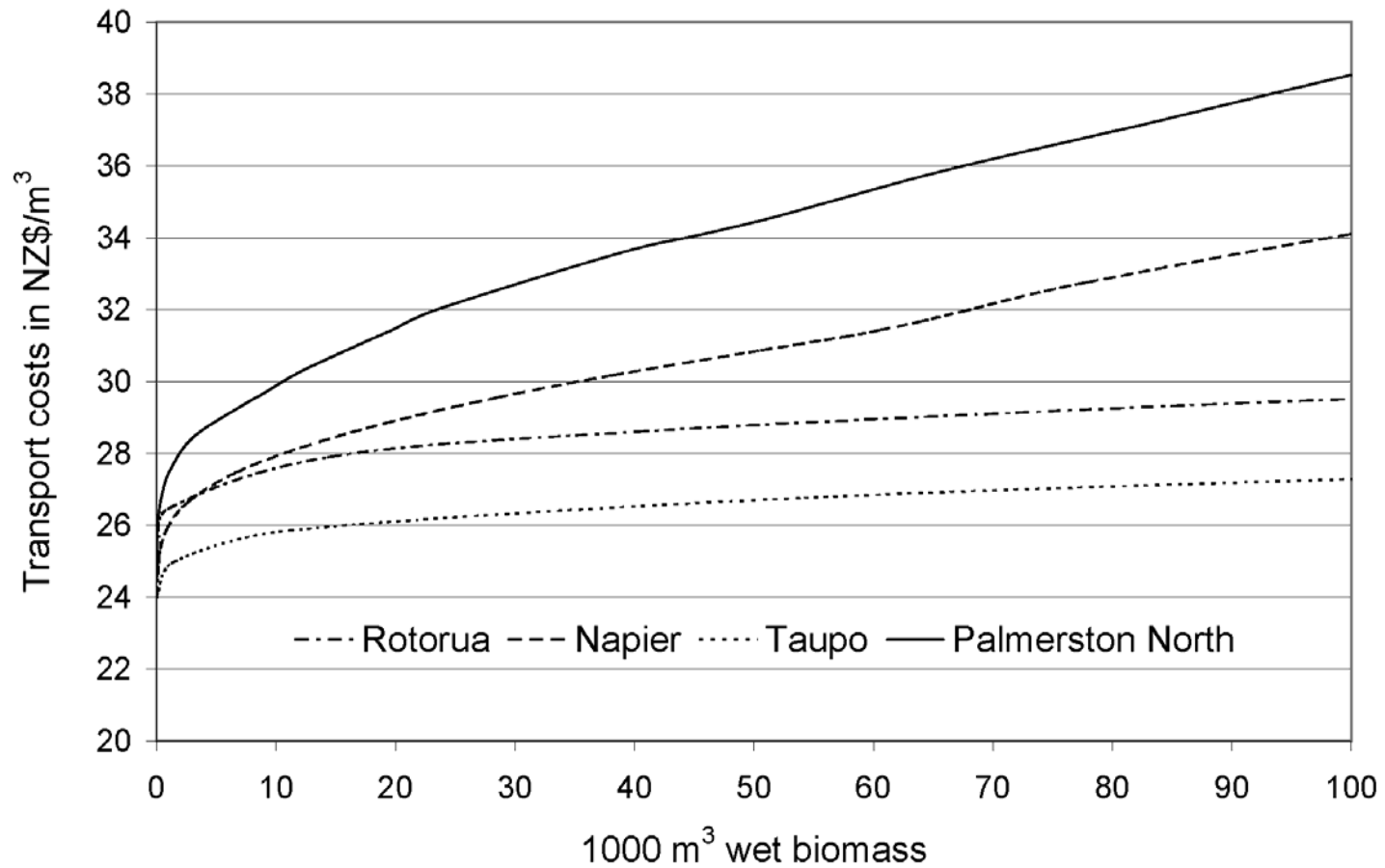


The Opportunities

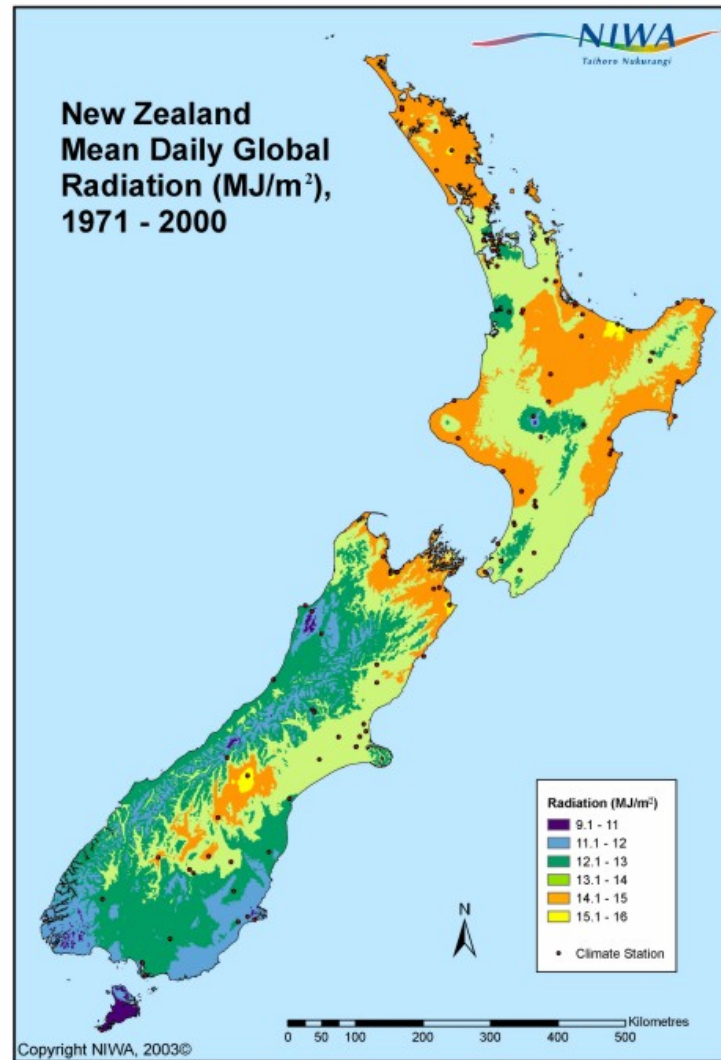
- Rotorua region is rich in energy resources
 - geothermal, hydro, solar and bioenergy
 - many of a size that can be developed and used locally.
- Backed by research capabilities at Scion.
- Strong capabilities at Waiariki Institute of technology
- Energy based environment - Wood processing and associated energy activities.
- Strong networking ability of the iwi authorities in the area,.
- Future demand for energy can be met by
 - Improving current use of energy (business as usual)
 - Investment in on-site energy plant (business as usual and to meet growth)
- The region has strong infrastructure connections
 - gas and electricity
 - good measure of security of supply



Opportunity - Forest Residue

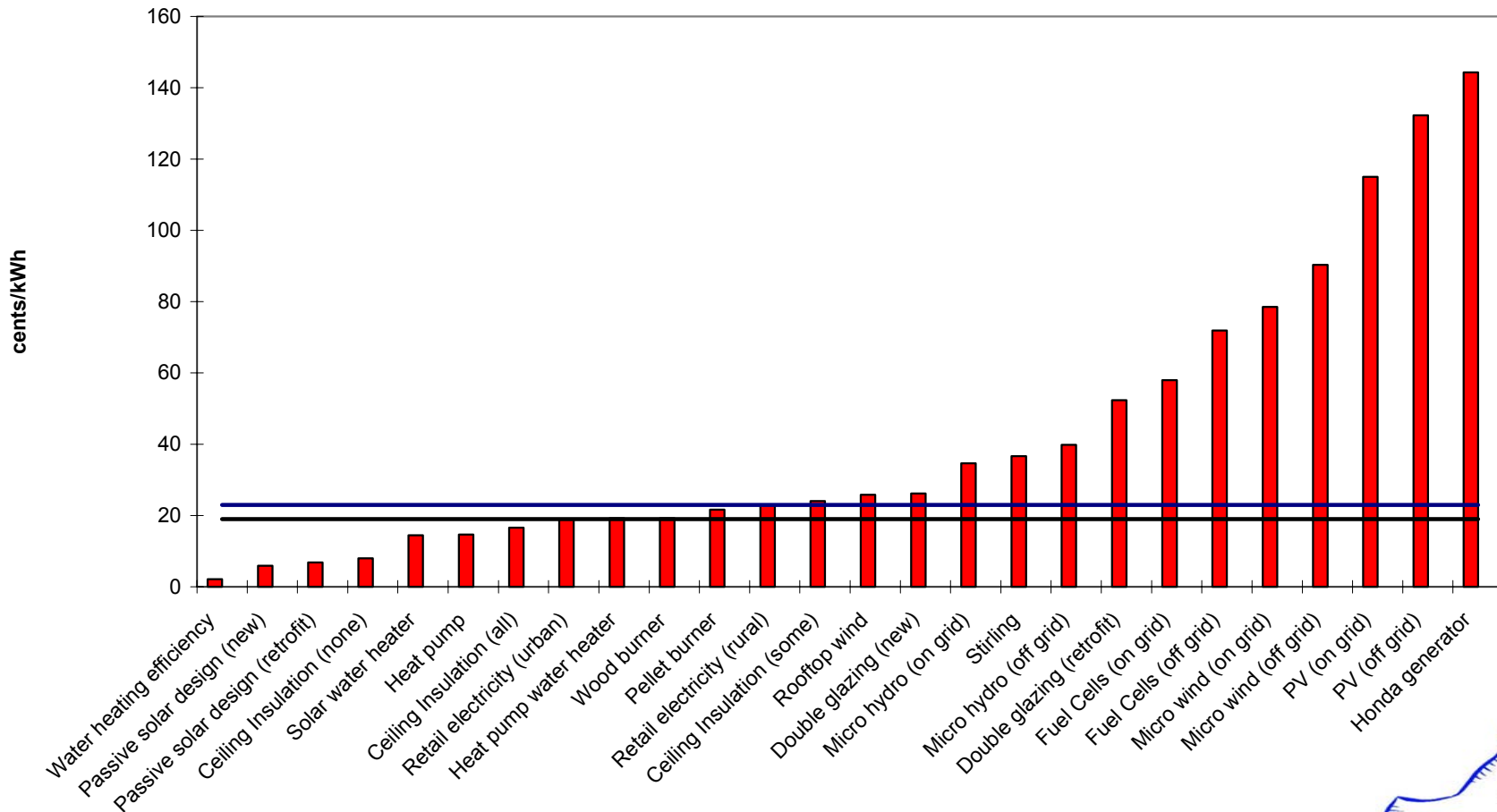


Opportunity - Solar Water Heating



Opportunity - Micro Generation and Heating

Micro generation costs



Opportunities –Energy Supply

- Additional local electricity generation
 - Micro and small hydro
 - Landowner developed geothermal
 - Bioenergy cogeneration plants at wood processing sites,
 - Photovoltaic solar electricity generators for off-grid
- Direct heat programme
 - Downhole geothermal extraction, especially for motels / hotels
 - Industrial direct heat programmes
- Bioenergy (woody biomass) programme
 - Woodburners with wet-backs
 - Reduce the cost of extracting forest residues
 - Forest residues – transport biofuel
 - Wood pellets burners in schools, motels and hotels



Residues to Revenue



Barriers

- Accessing guaranteed low cost energy supply
 - for business
- Access to capital and resources
- Community attitudes and knowledge
- Lack of leadership and understanding
- Access to information
- Resource consents
- Fragmented energy market
 - No ‘requirement’ to supply
- Legislation
 - Limitation on lines company ownership in generation
 - RMA amendment limited to electricity (not heat or lines)



Barriers - Electricity Generation from Bioenergy

- Currently only economic if on-site wood waste
- Economics depend on avoiding waste disposal costs
- Coal is a good supplementary fuel for bioenergy plant
- Cogeneration of heat and electricity required to improve economics
- Cost of extraction of forest residues

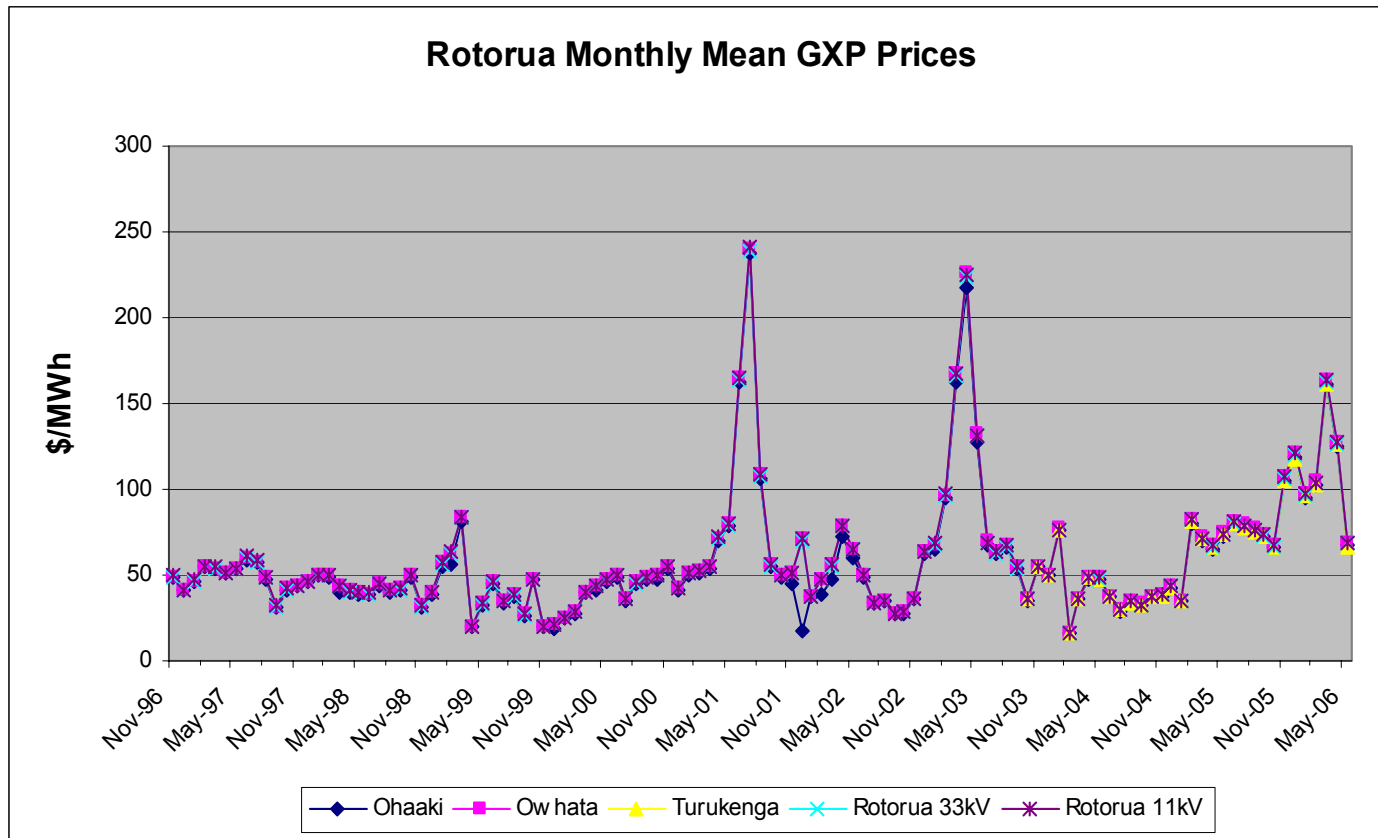


Energy Related Risks

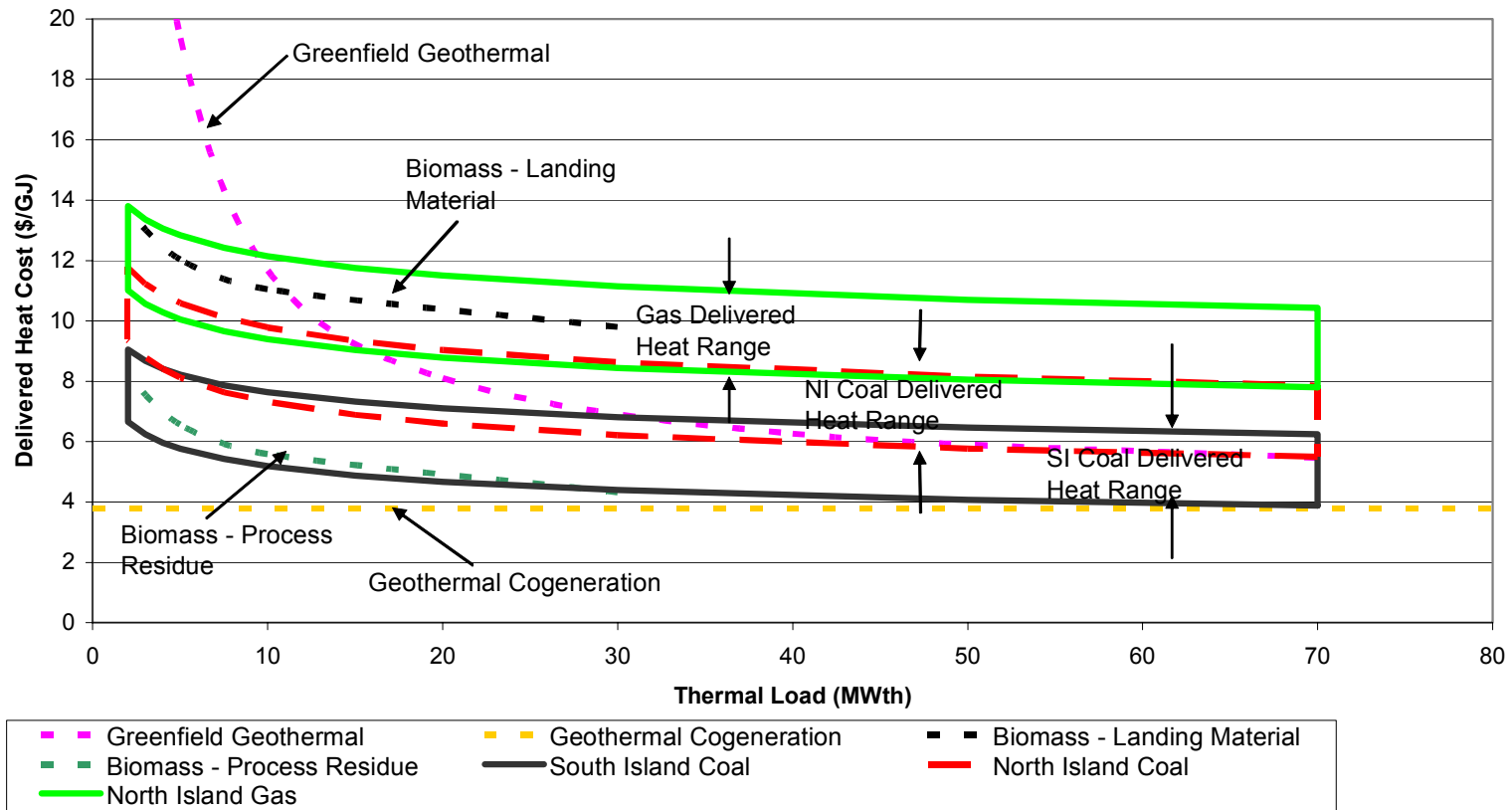
- Business closure because of high energy costs
- Missed opportunities for government funds
 - Warm home programmes
 - Research initiatives
 - Training opportunities
- Limited investment in growth
- Inappropriate planning and resource allocation
- Adoption of poor environmental standards
- Supply risks related to condition of infrastructure
- Cold and unhealthy homes



Risks - Fluctuations in Spot Electricity Prices



Risks - Heating Fuel Costs

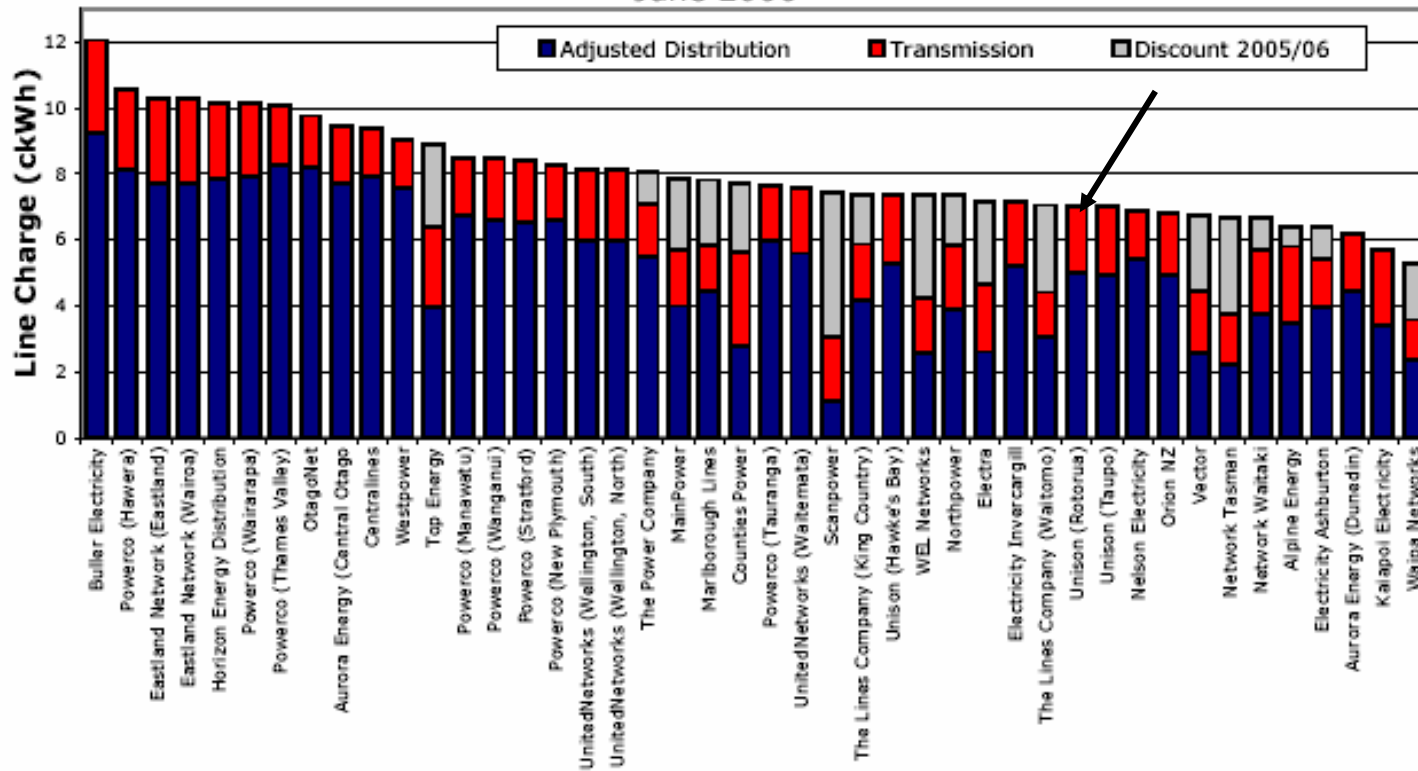


Source: www.eastharbour.co.nz



Risks - Electricity Line Charges

Figure 1: Approximate Ranking of Lines Company Charges
June 2006



Risks - Large Energy Projects

- Future new energy projects depend on
 - access to the resource
 - distance from the market
- Economies of scale with size of plant
- New investments are likely to be small /embedded

- Regional Policy Statements can assist or hinder
- Regional attitudes can assist or hinder



Rotorua Energy Strategy

Based on five threads:

1. Reducing business costs
2. Warm and Healthy homes
3. Research and Innovation
4. Trades training
5. Energy Champion
 - Rotorua Energy Association



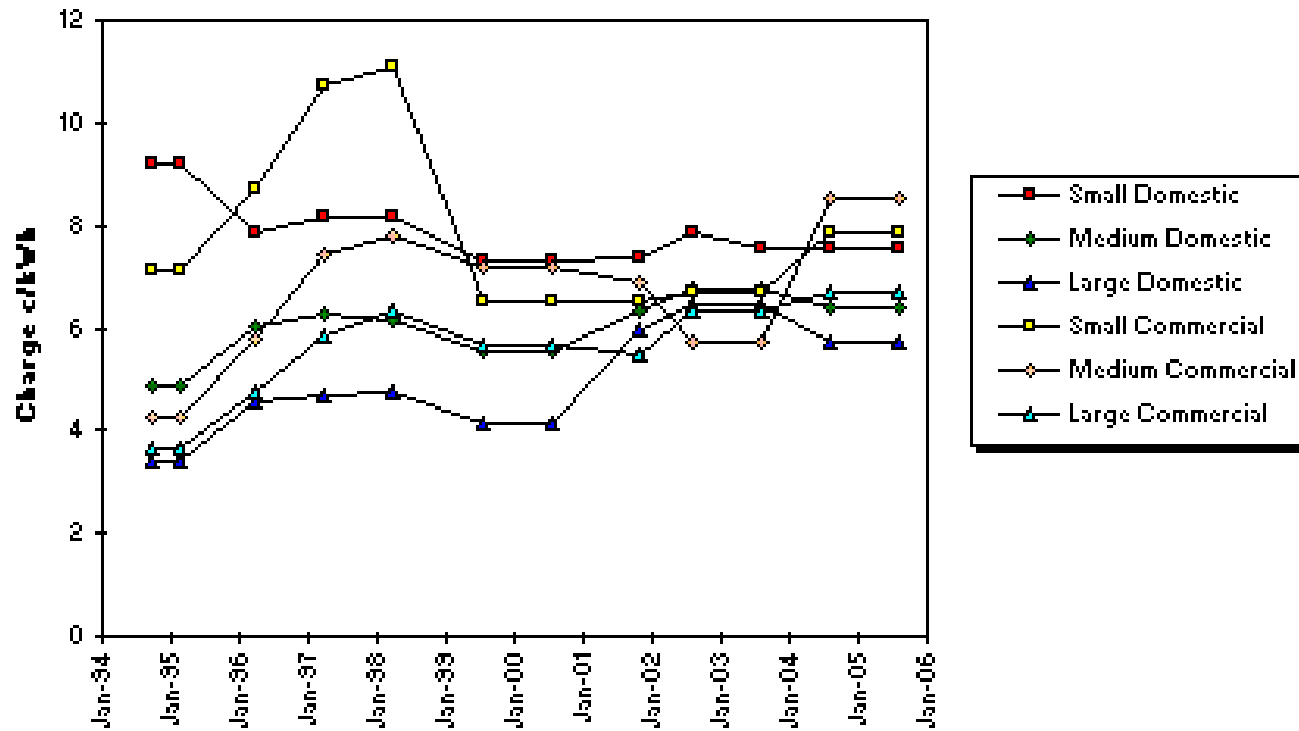
1. Reducing Business Costs

- Investment in energy efficiency opportunities
 - one of the best investments a community can make.
 - optimising energy use -> cost savings.
 - Reduced energy costs release funds for investment.
- Costs can be reduced through:
 - Energy and electricity audits
 - Industry benchmarking
 - Industrial and commercial energy auditing
 - Cluster activities.
 - Energy contracts with suppliers.



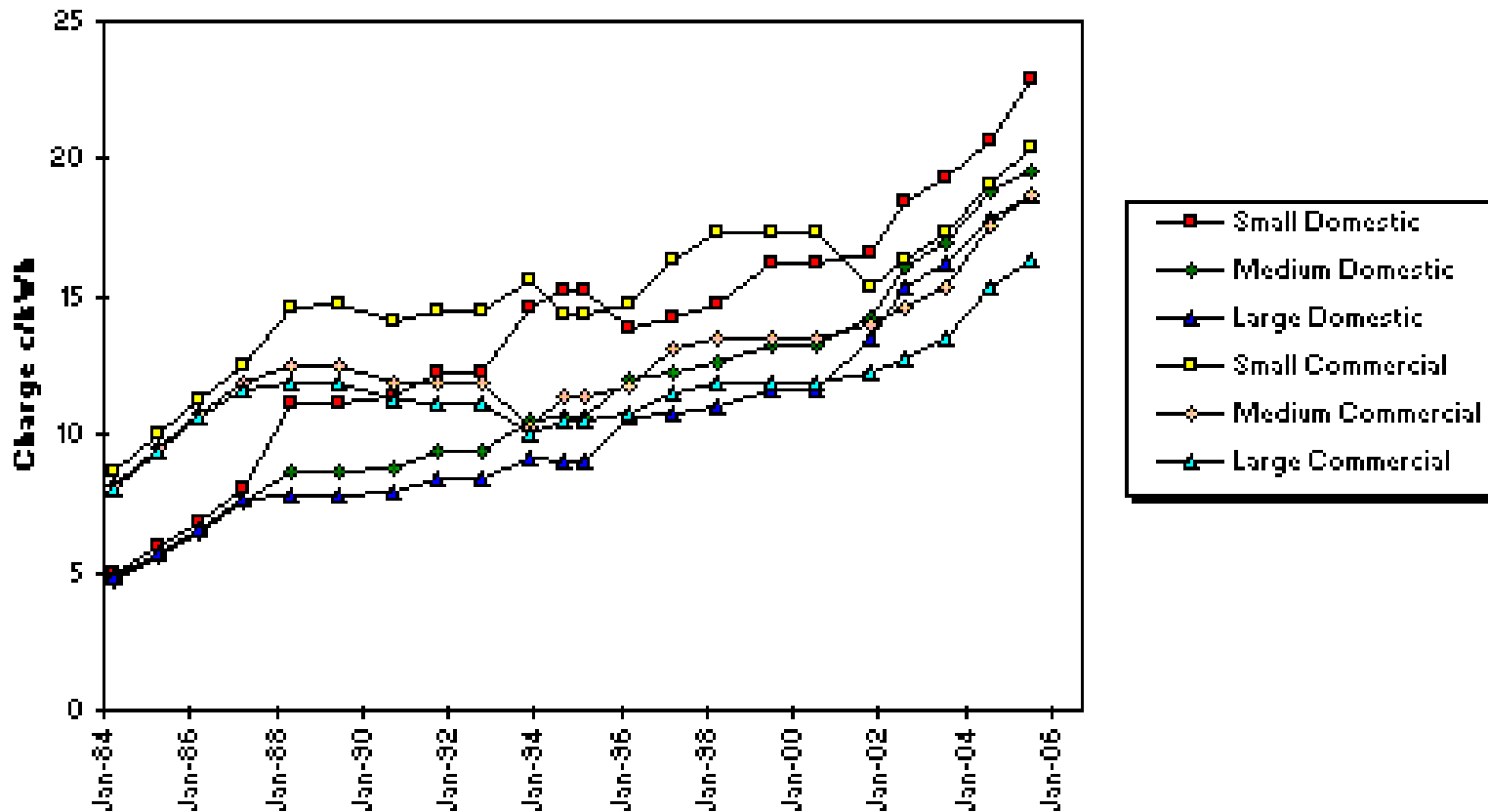
Reducing Business Costs - Line Changes

Equivalent Line Charge



Reducing Business Costs - Electricity

Incumbent Retailer's Charges



Reducing Business Costs - Heat Plant

- Most people focus on electricity and forget heat
- Heat opportunities are local
- Bioenergy, geothermal and solar heat is economic
- Heat and cooling information is poor
- Few published role models or case studies
- Few heat and cooling engineers



Reducing Business Costs - Energy Efficiency

- Improved management of electricity spot prices
 - use of local generation
 - demand management
- Awareness raising on energy efficiency and use
- Reduced costs through energy efficiency and peak shifting
- Demand management improvements for business
- Training of skilled tradespeople experienced in energy management



Reducing Business Costs – The Problem

- Benefits
 - Large number of opportunities
 - Total energy-use effect can be significant
 - Often able to take action directly to reduce costs
- Issues
 - Not core business so require external assistance
 - Lack of information and role models
 - Poor knowledge of current energy use
 - Capital constrained

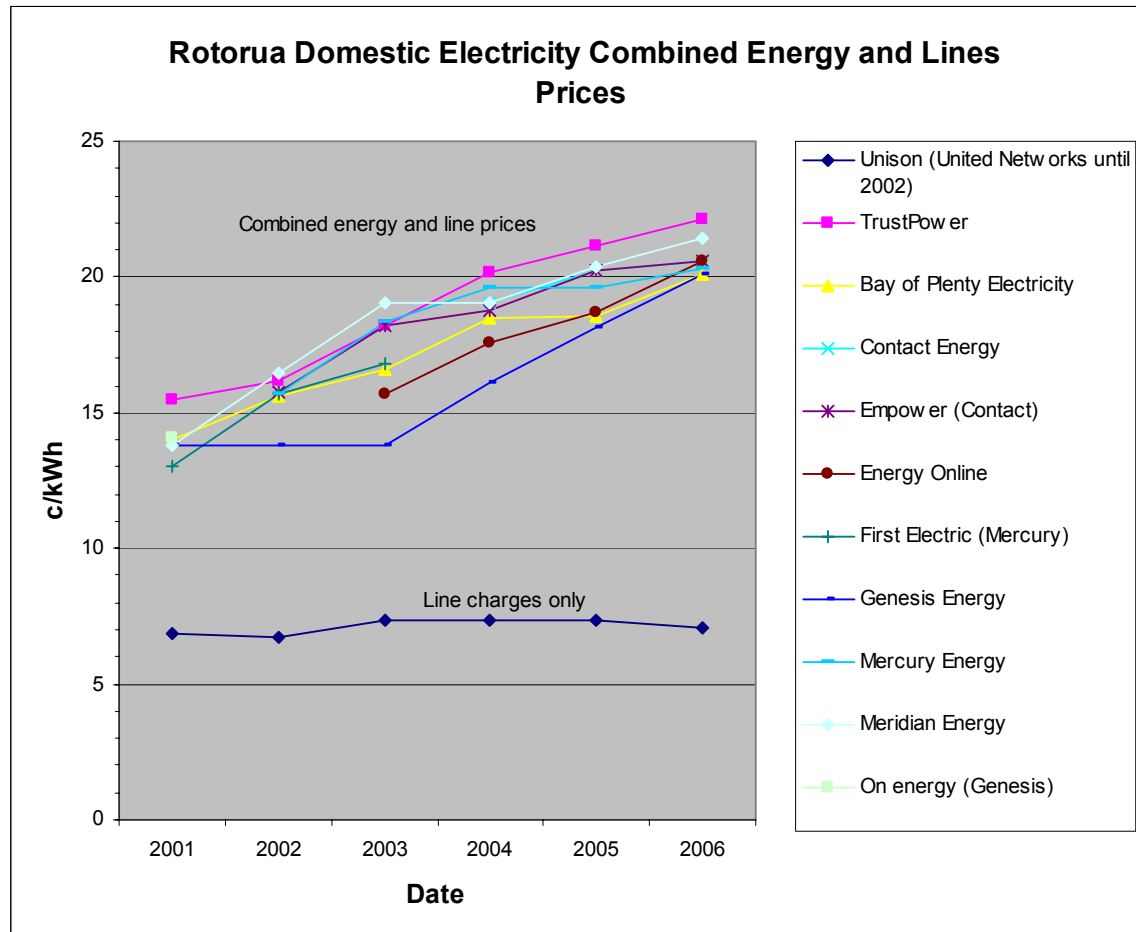


2. Warm and Healthy Homes

- Should be the highest priority investment opportunity for the residential communities
- The capital cost barrier is significant.
- Communities need to be better informed of opportunities
 - New building design
 - Retrofitting existing buildings
 - Able to plan for future solutions.
- A residential energy strategy to provide leadership.



Warm Home - Electricity Prices



Warm Home - Opportunities

Key findings:

- There are a number of opportunities
 - Solar water heating
 - Wood pellets
 - Double glazing
- Residential energy savings are cost effective
- Investment is split amongst many players
- Investment benefit is directly obtained by the investor

Clear needs:

- Facilitation and co-ordination
- Information sourcing and sharing



3. Research and Innovation

- Scion is a very well established research entity
- Link with Taupo Clean Energy Centre
- Link with Landcare, GNS
- Establish Centre of Excellence for Bioenergy
 - Scion
 - Waiariki Institute of Technology
 - Landcare



Research - Opportunities

- Processing of organic waste to produce biogas
 - Manufacturing waste
 - Community sewage
- RDC facilities as role models for energy use
 - solar, geothermal, biodigesters and small hydro.
- Publicise existing information
 - energy technologies, energy efficiency and resources
- Longer term, deep geothermal can be expected to be used to meet energy supplies:
- Transport biofuel



4. Trades Training

- The number, scope and level of technical skills need to increase to achieve energy opportunities
- A proactive approach identifying actions/offering assistance - not just lobbying
- Establishing a community attitude of trades competence
- Waiariki Institute of Technology and local High Schools
- Training of heating and cooling engineers
- Skills in energy management



5. Energy Champion

- To maximise the opportunities for Rotorua.
- Without a champion many opportunities will be lost and others not recognised.
- An Energy Champion can:
 - monitor large national energy supply companies performance with regard to the District
 - be an advocate on behalf of district energy interests when necessary.
 - keep well informed about market behaviour and assist local business take appropriate actions.
 - facilitate securing of Government funding and assistance from energy related programmes.
 - have a central role in assisting investment in energy use within the District.



Rotorua Energy Association

- Forum for skills development
- Programme of dissemination of information
- Networking and experience sharing
- Facilitation of workshops and seminars
 - Public
 - Professionals
- To support the Energy Champion
- Assist with development of specific initiatives



A Sustainable Energy Future

- District must take ‘ownership’ of the energy issue
 - Integrate with regional initiatives
- Main drivers
 - Ensuring community well-being
 - Maximising economic growth
- The number of opportunities are substantial
- Key requirement for leadership
 - Local energy champions
 - Rotorua Energy Association
- Output
 - Empowering local investment
 - Deliver security of supply
 - Reduce business costs
 - Improve health of people



Strategy—Main Building Blocks

- Understanding regional attitudes to energy
- Demonstrating leadership
- Focus on projects that offer early “wins”
- Access Government funding—what’s available?
- Encouraging energy as a theme of Rotorua
- Get the base right and take a multi stream approach
- Knowledge is power—source and share information
- Engage the local community—get them involved
- Build the skills and knowledge of the local community.
- Energy riches - improved well-being and economic growth

