Electricity Guarantee for Rural Communities

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Discussion starter presentation to workshop

LGNZ Rural Sector

13 October 2006

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2013 - The Current Situation

Supply beyond 2013

Section 62 of the Electricity Act 1992 is titled *Continuance of Supply* and, with some qualifications, states:

> "an …. electricity distributor must not cease to supply line function services to that place"
>
> ……..

and,

"This section shall expire with the close of 31 March 2013"

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A Review Will Be Undertaken In 2007

Hon Trevor Mallard 2 June 2005

- A review of whether
  - obligation to maintain existing lines should continue beyond 2013
  - expire as currently provided for in the Electricity Act.
- Consideration of all the options
  - for ensuring that good arrangements are in place to ensure affected communities continue to have a reliable electricity supply.
- Holding the review in 2007 will allow
  - sufficient time for the legislation to be amended if necessary
  - for the continuing development of new technologies to supply electricity to homes and businesses.
- By then
  - the likely alternative technologies available for electricity supply after 2013
  - the economics of these technologies"

2013 – But Will it Happen?

- Buller Electricity Ltd (BEL) Asset Management Plan 2006 – 2016:

  BEL recognises the value of distributed generation in the following ways…

  - Contributing to supply of customers on marginal lines post-2013

- Marlborough Lines Media Article – 4 October 2006:

  Remote areas in Marlborough will still be supplied with electricity after 2013, says.

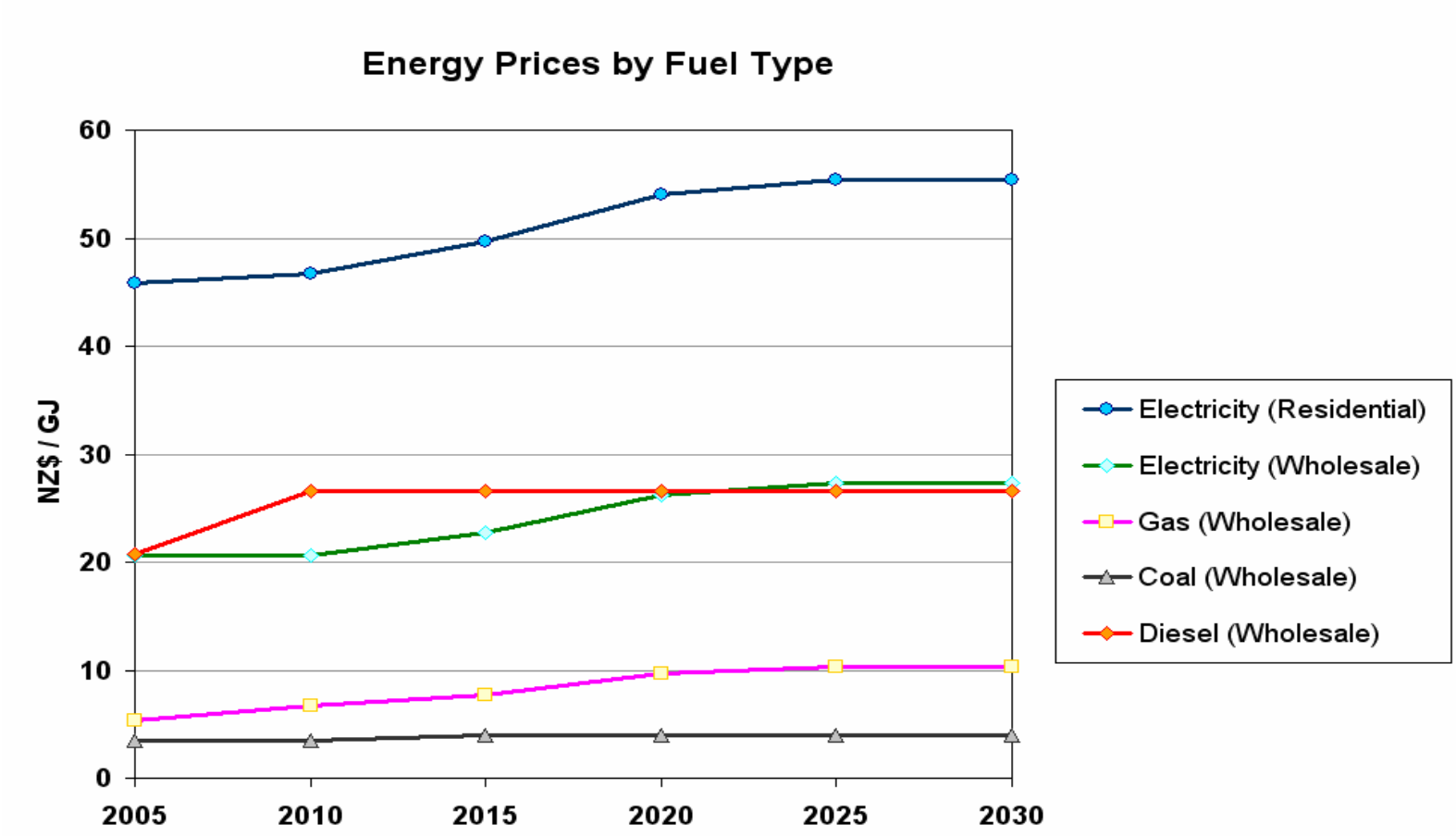
  Marlborough Lines managing director Ken Forrest said his company planned to keep supplying power to all its current customers to and beyond 2013.

  There was nowhere in Marlborough where it was uneconomic to supply electricity, he said and the power lines were already in place to remote areas.

Is 2013 The Issue Or Should Action Happen Now Anyway

- The issues for electricity users are here now
- Action can help improve community wellbeing
- There is a long lead time for the effects to be felt
- We have a lot of learning to do
- Changing habits takes time
- Investment can be spread over a reasonable time
- Councils are the only party looking after local energy interests
- Even if 2013 does not eventuate we will achieve lasting benefits

High Energy Costs



Source: MED Energy Outlook to 2030

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Retail Electricity Prices

Line Business (approx customer no. as at Aug 2005)/*Retailer*	15 Nov 1999 c/kWh	15 Feb 2006 c/kWh	15 May 2006 c/kWh	Change Feb 2006 to May 2006 %	Change Nov 1999 to May 2006 %	Change Nov 1999 to May 2006 $
Waipa Networks (16,100)	**4.98**	**4.96**	**5.30**	**7%**	**6%**	**$25**
Trustpower	12.16	17.33	18.83	9%	55%	$534
Contact Energy		18.00	18.00	0%		
Energy Online		16.06	18.54	15%		
Genesis Energy		14.48	14.48	0%		
Mercury Energy		16.61	17.93	8%		
Meridian Energy	12.45	16.78	16.78	0%	35%	$346

Source: MED

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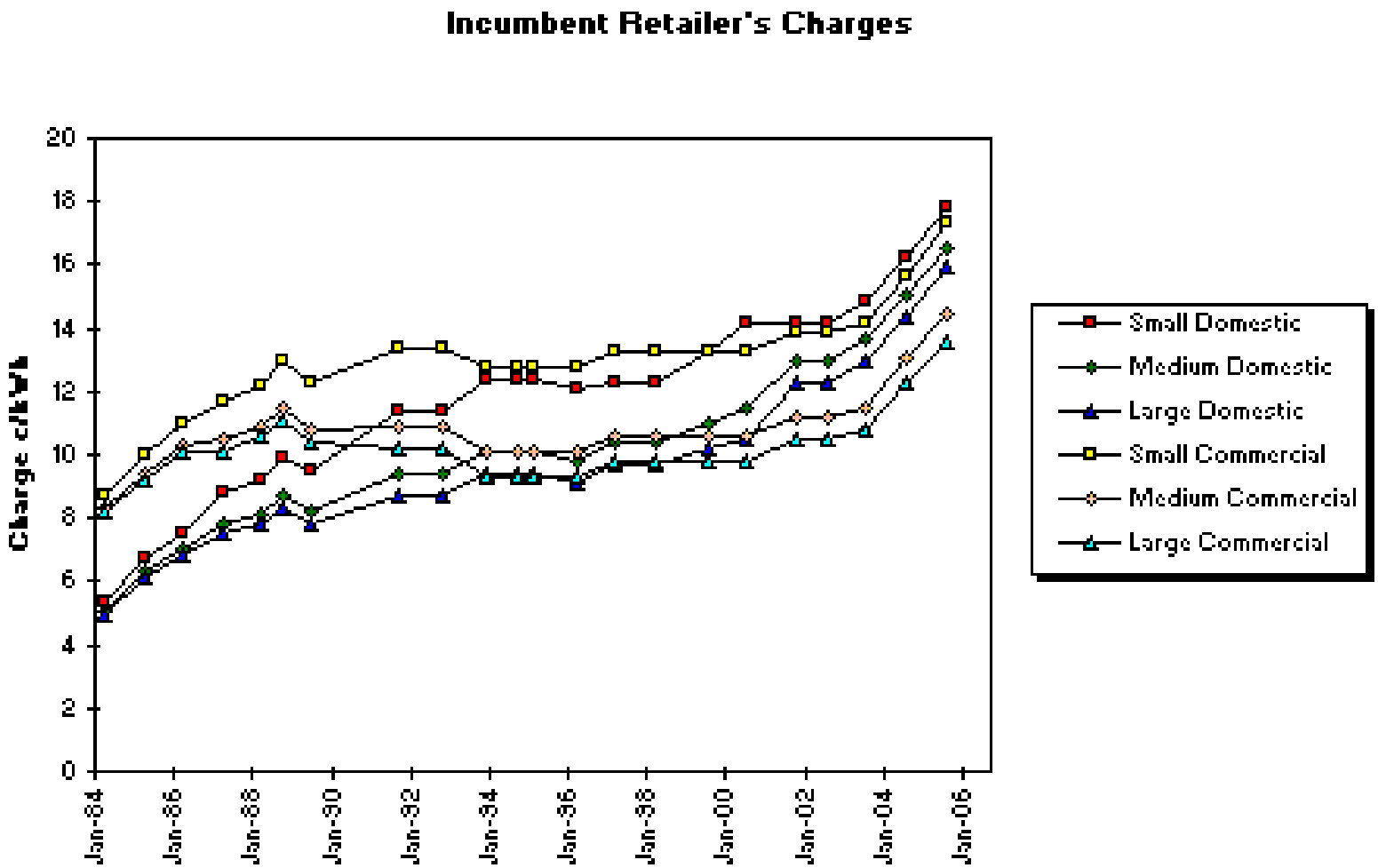
Retail Competition

	Waipa Networks	The Lines Company	Bay of Plenty Electricity
Contact Energy	18.00		21.51*
Mercury Energy	16.61		20.99
Meridian Energy	16.78	19.93	20.29
Trustpower	17.33*		22.67
Genesis Energy	14.48		
King Country Energy		21.42*	

Retail Prices Over Time



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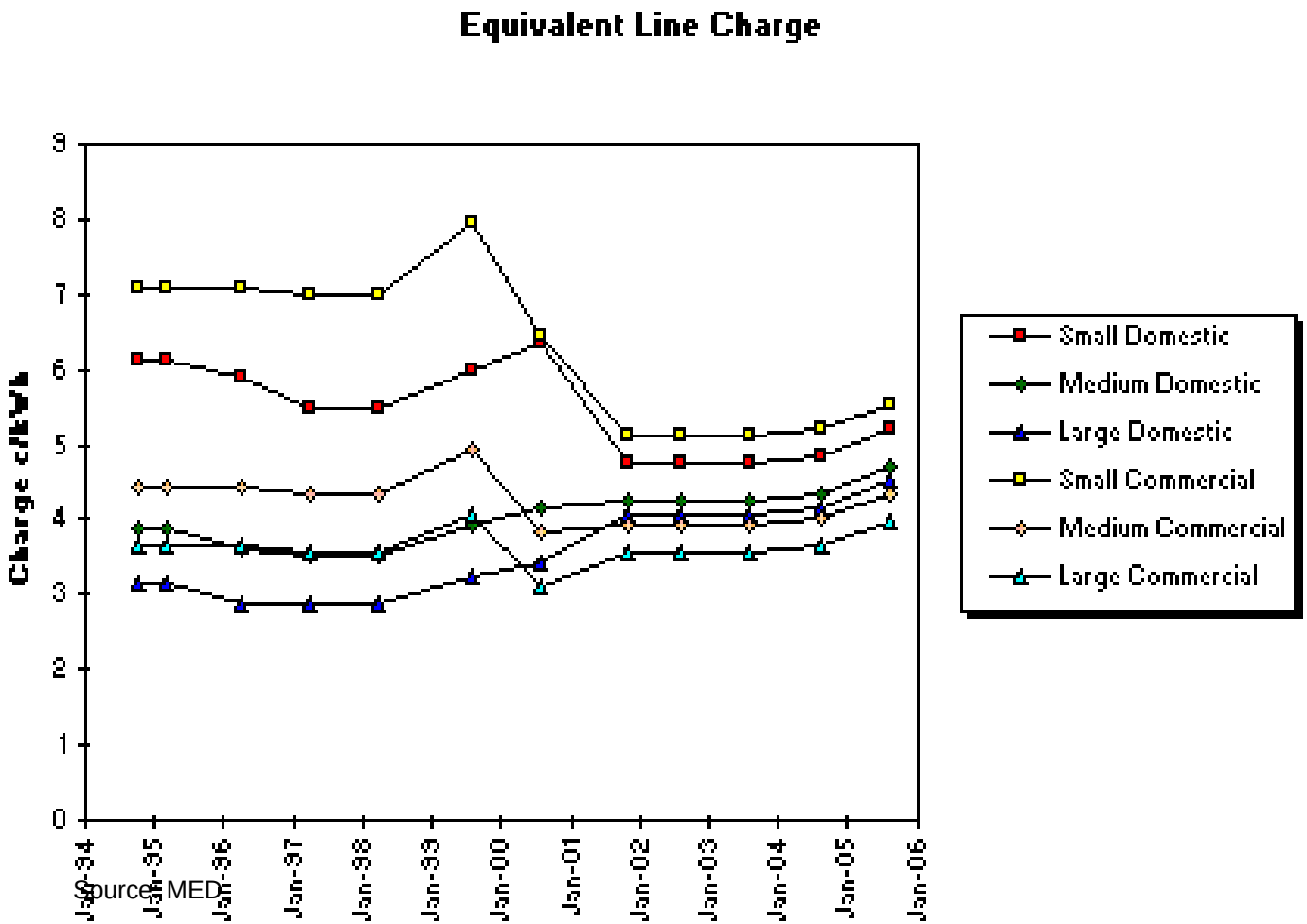
Line Charges Over Time



Source: MED

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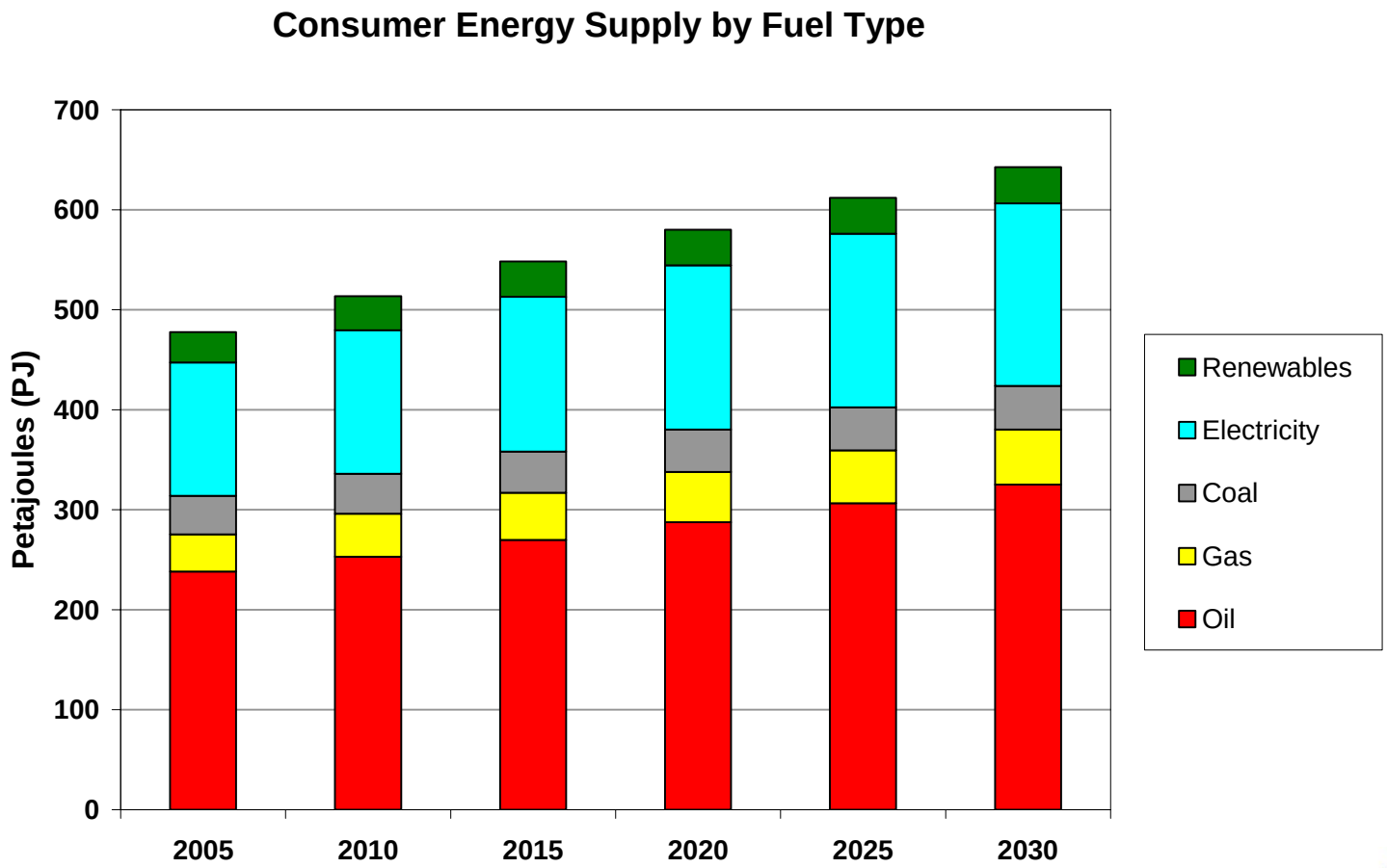
Sources of Energy



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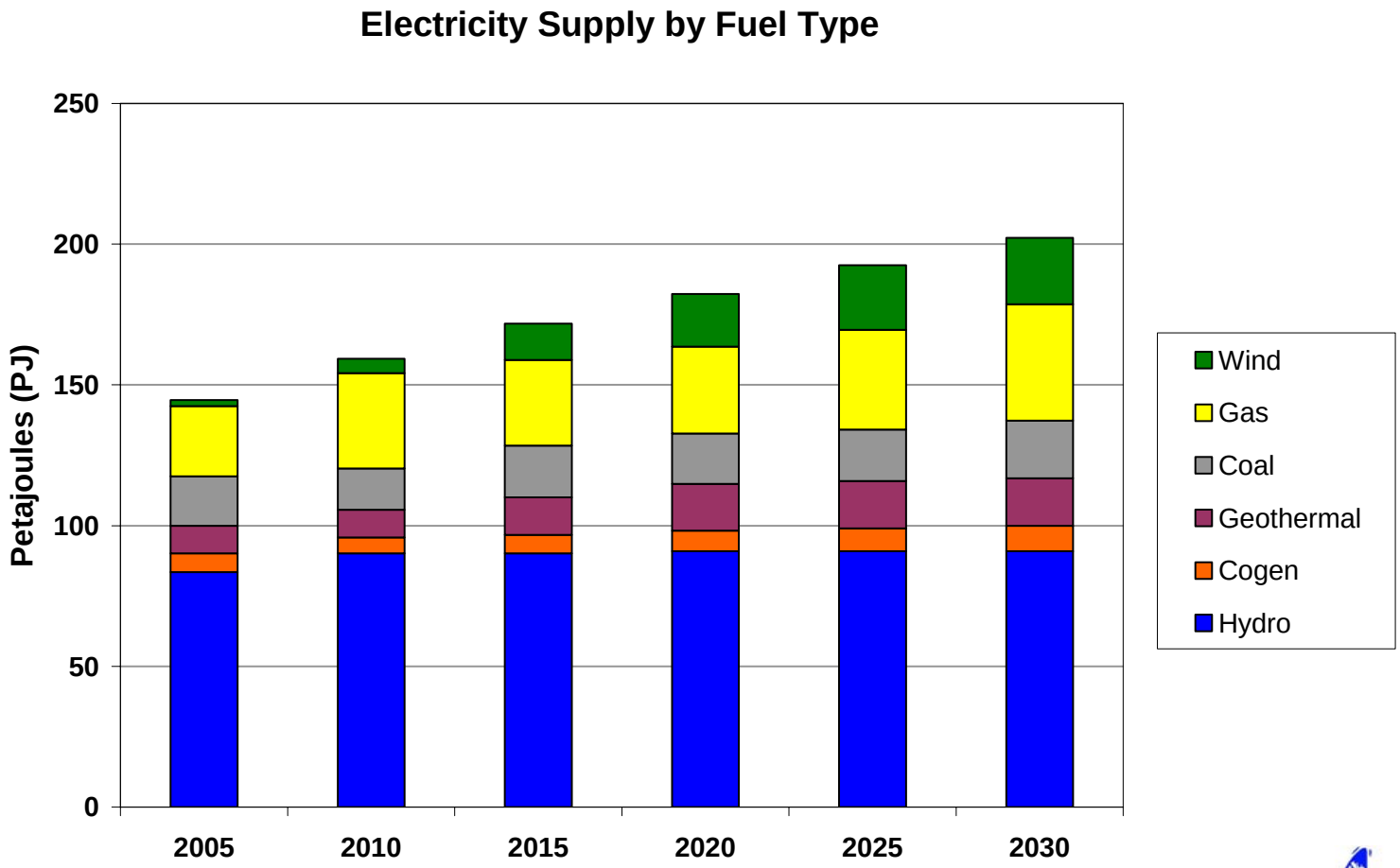
Sources of Electricity



Source: MED Energy Outlook to 2030

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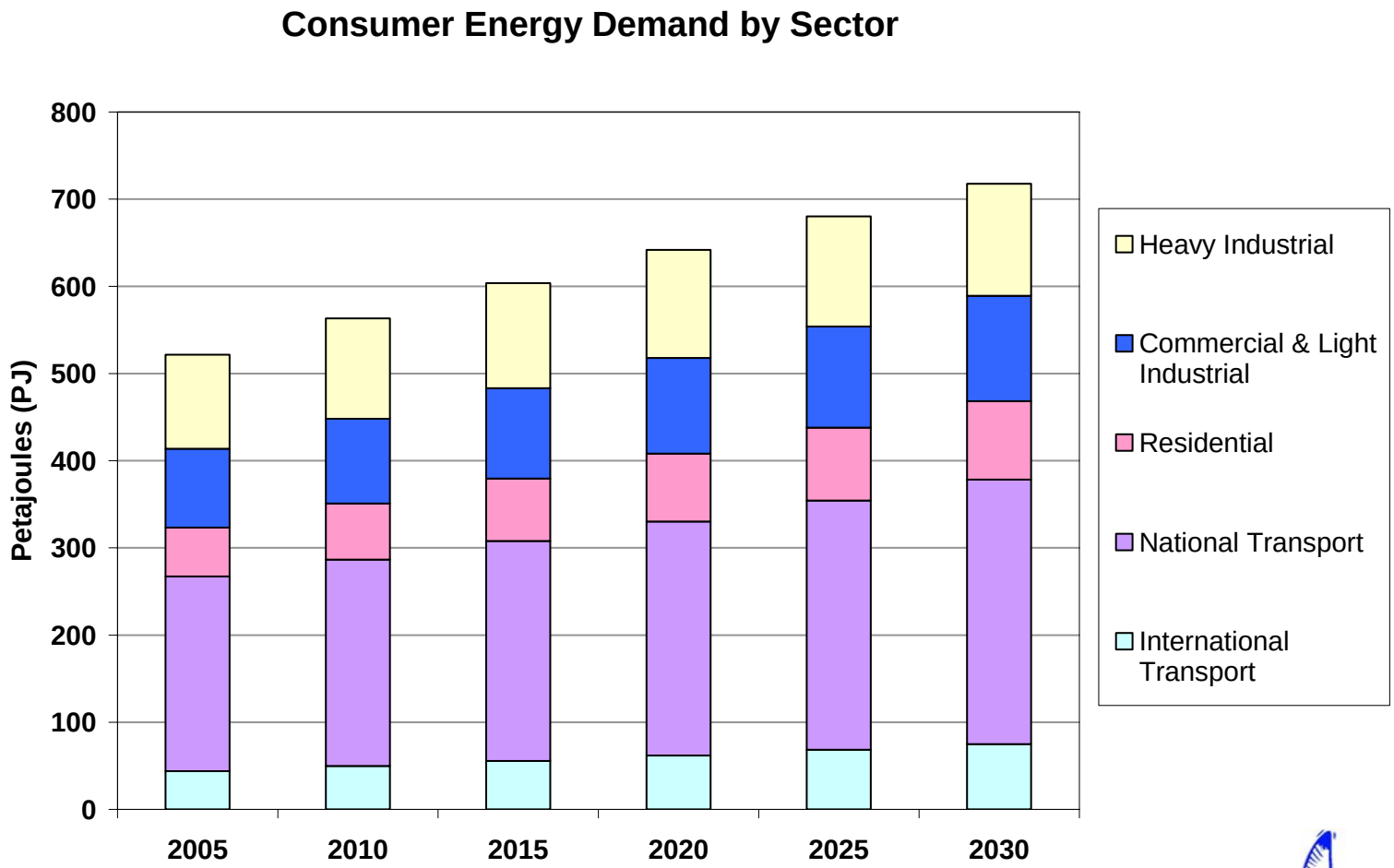
Consumers of Energy



Source: MED Energy Outlook to 2030

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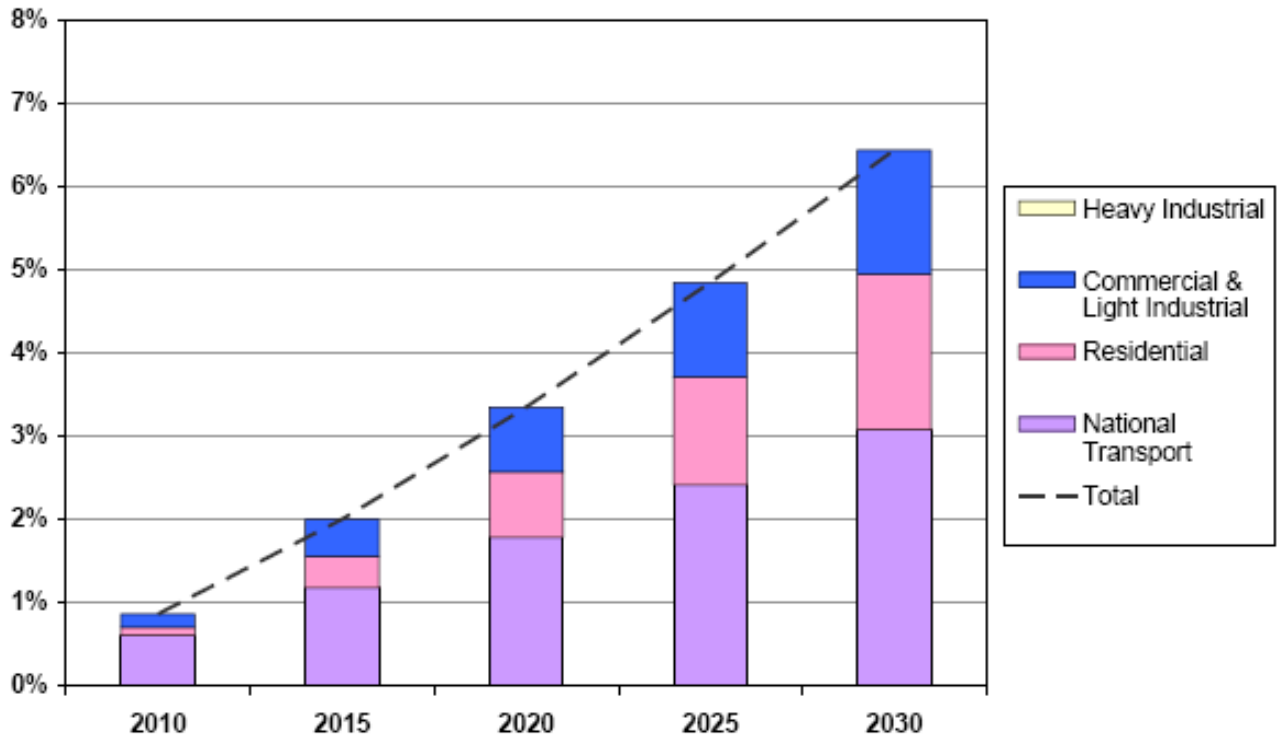
Sensitivity of Electricity Costs



High GDP Growth (+0.7% pa) Case: Percent Change of Total Consumer Energy Demand by Sector vz. Base Case

Source: MED Energy Outlook to 2030

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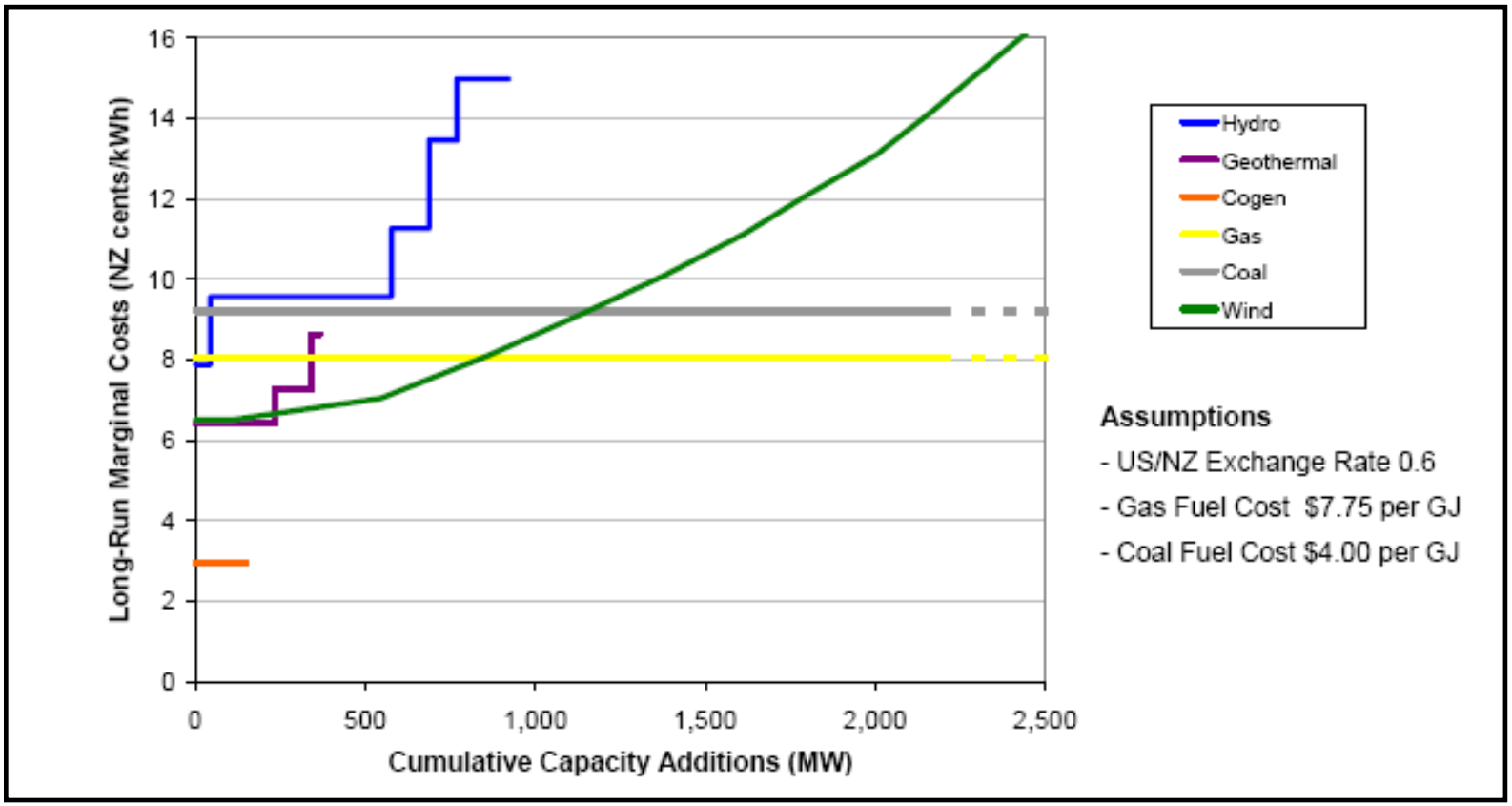
NZ Is Energy Rich

- Take up of opportunities depends on
  - Cost of conversion of natural resource into usable energy
  - Relative economics between options
  - Acceptable external affects
  - Long term access to natural resources
  - Community attitudes
  - Investor confidence
- Investor confidence depends on
  - An appropriate financial return
  - Investment risk
  - Resource consent conditions
- If any of these are missing, opportunities will not proceed

New Electricity Plant Curves



New Plant Generation Costs Assumed in Base Case to 2015

Source: MED Energy Outlook to 2030

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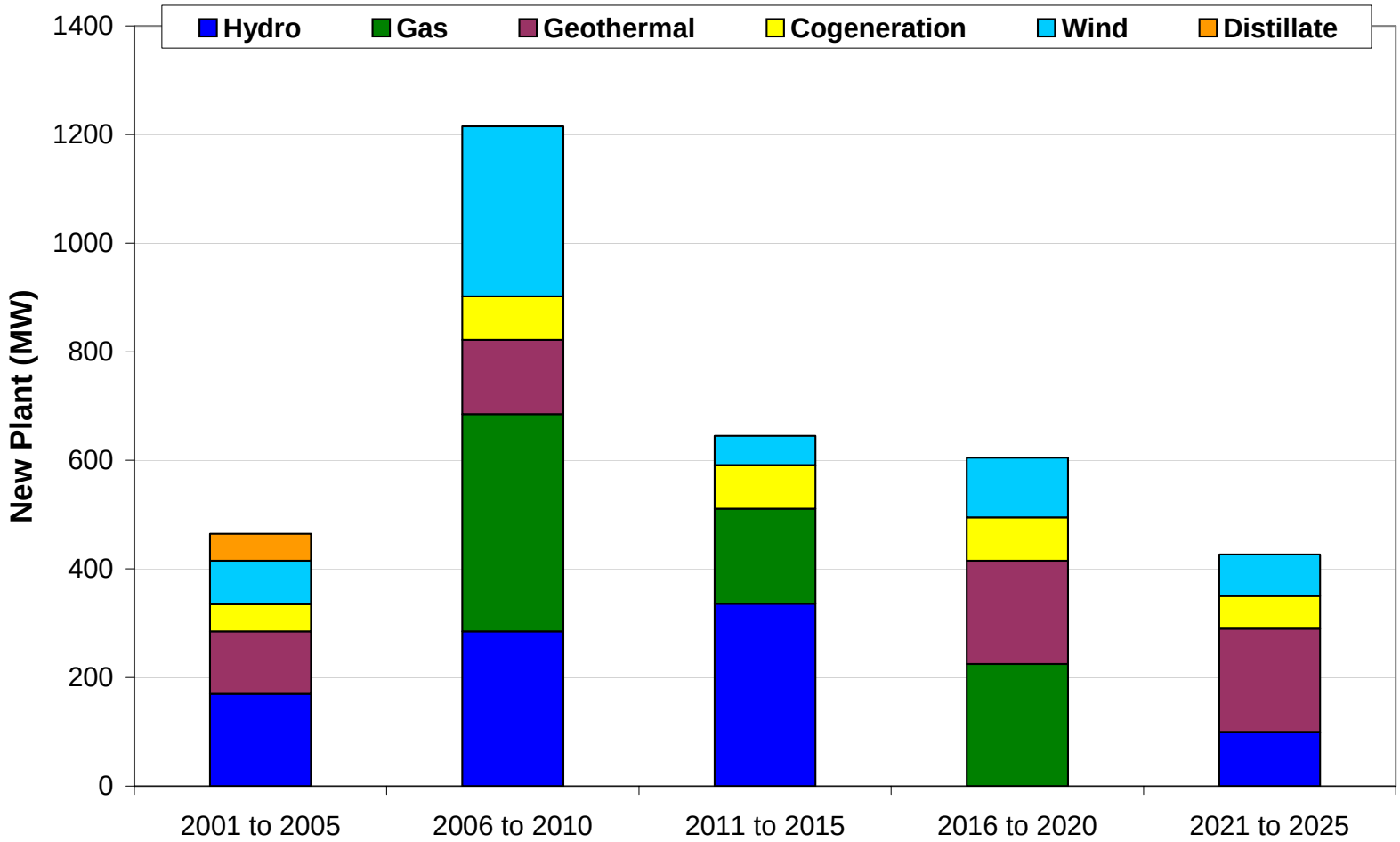
Price Relativities- Electricity/Heat Supply

- Increased mixed portfolio of investments
  - Next 1-4 years gas, wind, small hydro, solar thermal, woody biomass (process residue)
  - 5-10 years coal, wind, small hydro, geothermal heat, solar thermal, woody biomass (forest residue)
  - 10-15 years full portfolio of all options

New Electricity Generation



Source: MED Energy Outlook to 2025

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Issues Facing Rural Electricity Supply

- Change in land use affects change in electricity demand
  - Large dairy farms where electricity lines not designed for such loads
  - Residential infill increases number of users
  - Change from forestry to dairy
- Increased added value processing
  - Requires electricity
  - Increased quality required.
- Increased employment
- Increased servicing requirements
- Areas where less demand – supply becomes uneconomic

Increased Demand For Quality Energy in the Rural Sector

- Dependence on technology reliant on energy (usually electricity)
- Technology invariably requires
  - continuous supply of electricity
  - uninterruptible supply
  - frequency stability
- Significant business cost of interruption to supply
  - short term – effect on current operations
  - longer periods – livestock/crop management issues
- High cost of providing lines for secure supply
- Rural activities increasingly recognised as major business undertaking needing to manage its risk

Sustainable Supply

- Secure, affordable and environmentally responsible
- Thinking smarter about what we already know
- Using fossil fuels as a transition to long term sustainable supply
- Balancing long term with short term goals
- Regional vs local interests
- Post 2007 climate change will change relative costs of options
- Increased use of local energy for local needs

Priority is Demand Management

- Increasing use of demand management as a supply side tool requires
  - Smart time of use metering
  - Recognition of energy costs
  - Improved energy efficiency
    - double glazing
    - building insulation
  - On-site energy production
    - Solar water heating,
    - electricity generation
- Requires assistance to obtain scale
  - Market transformation
  - Demonstration and experience

Technology Solutions

- There are likely to be significant opportunities for more distributed generation and on-site generation in New Zealand as March 2013 approaches
- Improved technology efficiencies are reducing costs
- Technically have adequate supply options
- Uptake of options is limited by community interests
- Technology can meet agreed environmental standards – community needs to agree these

Energy Supply Resilience

- District plans can facilitate or hinder energy infrastructure
- Need capacity for handling intermittent supply
- Benefit of community owned electricity network companies
- Inability of lines companies to directly manage investment in renewable energy
- Need for District Energy Plans

Local Supply Options

- Wind
  - Pumping
  - Electricity generation
- Solar
  - Hot water
  - electricity
- Small hydro
  - Embedded generation
- Geothermal heating
- Bioenergy
  - Anaerobic digestion
  - Heating
  - electricity

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Wind

Farmer self sufficiency

Direct pumping

Community owned windfarm

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Small hydro

Water pumping

On-site electricity

Combined irrigation and electricity

Solar

Community amenity facilities

School /community pool

Farm hot water

Barriers to Action

- High upfront costs
  - energy facilities have high capital cost but long term (30-100year) operation
- Inadequate information on options
  - eg farm digesters, solar water pumping
- Inadequate push for demand side improvements
  - Inadequate data, technical information, handbooks, case studies
- Inadequate transfer of knowledge and experience
  - No applied research since NZERDC and LFTB
  - No support for consultants & decision makers to visit overseas
  - No applied R & D programme
- Cost of investigations
  - High cost of investigations before decisions can be made
  - High risk if likely to not get resource consent

What Can Councils do?

- Leadership
  - Capture by minority vocal community interests
  - Regional vs individual interests
  - Role of Government
  - Adjudication of competing regional interests
  - Look after the local energy interests – no one else will
- Community owned schemes
  - Addition to local water supply scheme
- Examples
- Case studies
- Information
- Technical Assistance