

5 May 2000

Russell Vogtherr  
Ministry of Commerce  
PO Box 1473  
WELLINGTON

Dear Mr Vogtherr

### **REFINEMENT OF ODV FOR ELECTRICITY DISTRIBUTION BUSINESS REPORTING**

Enermet's experience in control of electrical heating loads goes back 53 years and covers 28 countries around the world. We have seen load control reducing the costs of delivering electricity under a diverse range of economic regimes. At the same time, in spite of government prodding, load control has failed to flourish in the UK and North America. We are concerned that as our economy moves towards the free market model our electricity industry could lose the benefit of load control unless care is taken to ensure that the efficient systems that have been built in New Zealand are given the framework to thrive.

Nearly one half of all domestic electricity is consumed by water heaters and is delivered through a load control switch operated by the distribution company. If this control was discontinued the increased load on the New Zealand electricity network would be some 800 MW which would cost \$M138 per year<sup>1</sup> to deliver in terms of increased generation, transmission and distribution capacity.

What is not widely understood is that less than 10% of the benefit of load control is related to generation and subject to market forces. The main benefit of load control falls in the monopoly section of the industry which at present is disciplined by neither commercial nor democratic processes.

The present "light handed regulation" of Electricity Line Business (ELB's) is based on reporting profits in terms of a percentage of the ODV with a voluntary limit set on the Return On Investment (ROI). The ELB profit can be expressed by:

$$\text{Profit} = \text{ROI} \times \text{ODV}$$

In all but a few exceptional circumstances the EV is much greater than the ODRC so the equation becomes:

$$\text{Profit} = \text{ROI} \times \text{ODRC}$$

For a given network geography and standard of reliability the Optimised Depreciated Replacement Cost (ODRC) is a function of the Maximum Demand (MD).

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<sup>1</sup> See Enermet Ltd submission to the Ministerial Inquiry into the Electricity Industry.

The Profit can be written:

$$\text{Profit} = \text{ROI} \times \text{Function}_{\text{ODRC}}(\text{MD})$$

A feature of the New Zealand electricity industry that is not found in the UK or North America is that the NZ ELB has direct control of the MD. The NZ ELB can increase its maximum demand and therefore its profit by allowing its load control system to run down. Enermet has evidence that this is happening:

- Investment in replacement ripple control equipment is running at about half the level necessary to sustain the existing systems.
- Some ELB's will only invest in ripple control transmitters if they are paid to do so by the retailers. Retailers are not in a good position to organise an effective load control system so this effectively blocks renewal of the load control system. The outcome, increased peak demand, increases the lines company profits.
- Some ELB's line charges do not encourage the retailers to invest in ripple control receivers or to set retail tariffs that will promote consumer demand side management initiatives.
- Some ELB's executives have actually mentioned to us the opportunities for gaming the ODRC by deliberately retarding load control activities.

There has been a trend for the regulator to put pressure on the ELB to improve network utilisation statistics. In fact one of the best tools to improve network utilisation is load control. Pressure to improve utilisation in terms of MD/Capacity appears to be having the perverse effect of discouraging some ELB's from maintaining load control systems.

We submit that the valuation and/or regulatory system needs to be refined to restore the incentive for the network company to maintain load control systems and develop new initiatives. We have identified four possible approaches. None is without difficulties but any one of them would be an improvement on the present situation:

1. The effectiveness of the load control system could be audited and any controllable load that in fact was not being controlled at the time of measured maximum demand could be deducted from the optimum network capacity.
2. The load factor of the network could be audited and the network company rewarded for improvement in load factor.
3. The network business could be split in two parts: delivery of essential electricity with an uninterrupted supply and delivery of non-essential electricity where the network is entitled to interrupt supply at peak load times or during network component outages. Profits derived from the delivery of non-essential electricity would not be regulated.
4. Directly rewarding reductions in MD by a corresponding reduction in the 'x' factor of CPI-x (if adopted).

Thank you for the opportunity to present our views. We hope our contribution is useful.

Yours faithfully

David Waugh  
**MANAGER NEW ZEALAND**