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Ministry of Economic Development
Wellington

Dear Sir or Madam

Re: Government Policy Statement on Electricity Governance

Introduction.

The governance of the electricity industry in New Zealand has now been recognised as not having served the best interests of its customers. The establishment of the Electricity Commission after the use of so called “light handed” regulation was the result. Since then many legislative changes have been introduced or are being considered, along with standard consultative processes. When submissions in response to these consultative opportunities are analysed, it is clear that the industry is capable of providing significant resources to make submissions. In contrast, the consumer is poorly represented and there are few submissions from consumer groups and the general public. However, there are significant concerns amongst consumer groups and the general public that need to be identified and addressed. Initially we believe these concerns may require parts of the proposed GPS on Electricity Governance to be amended.

On 29 March, an hour was designated “Earth Hour” and a number of cities, including Christchurch, participated. Whilst the impact in economic terms was negligible, this event is one method of motivating the public to question at least some aspects of our energy use. A simple issue relates to street lighting, which is a significant load, and which for practical reasons was not turned off as part of Christchurch’s “Earth Hour” initiatives. However some members of the public were prepared to question whether we need all the street lights on, all night, every night. A further comment in this vein was made by Paul Henry on TV1’s Breakfast Show on 28 March noting that a number of lights were not working on his route to work, and that due to the lack of traffic, he hardly noticed.

If the electricity industry is to serve the best interests of New Zealanders, then a paradigm shift in industry governance is required to re-establish effective communications between the industry and its customers, a situation that was expected to develop after the original “light handed” regulations were promulgated.

Our company is concerned that the present situation with respect to Electricity Governance is strongly founded on a “business as usual” commercial environment that is preventing the introduction of innovative solutions at all stages of the electricity, and to some extent, energy supply chains.

We note in the initial section of the draft GPS entitled “ Commissions Powers and Approach” that:

“The Commission should keep in mind the importance of encouraging innovation. It should therefore consider, when deciding how best to deliver on its objectives, any trade-offs between certainty and clarity on the one hand and encouraging and allowing scope for innovation on the other.”

The following are comments on specific sections of the GPS that we believe will assist in the encouragement of innovation. They are confined to the areas of Electricity Efficiency and Distributed Generation, two areas where we believe our experiences are relevant and are important to moving New Zealand towards a more sustainable future. Comments are made in relation to some specific paragraphs from the draft GPS below.

Electricity efficiency

33. Maximising the contribution of cost-effective energy efficiency, conservation and renewable energy resources is a key means to achieving the vision set out in the NZES for a reliable, resilient system delivering New Zealand sustainable, low emissions energy services. A principle of the NZES is that investment in energy efficiency measures should occur where this is cheaper than the long-term costs of building extra generation and network capacity, including environmental costs. Energy efficiency measures are described in more detail in the NZEECS which identifies the main measures, policy instruments and responsibility for implementation.

Any contribution to this vision must be considered within a robust market environment and the distinction between implementing measures for new business initiatives and retrofitting to existing initiatives recognised. Market forces will fail to deliver solutions that are in accordance with the NZES or NZEECS when the economic cases are based on a short time frames, an organisation has limited capital resources and where institutional barriers exist.

34. Electricity efficiency and demand side management help reduce demand for electricity, thereby reducing pressure on prices, scarce resources and the environment. The Commission should ensure that it gives full consideration to the contribution of the demand side as well as the supply side in meeting the Government’s electricity objectives.

This is an area that, although recognised as having significant potential, has not been successfully introduced on a wide scale. The “business as usual” commercial environment has led to continued use of ripple control as the predominant mechanism for domestic load control, and only recently have there been indications from the electrical industry to consider alternatives. The recent “Earth Hour” event has raised awareness that it is possible to save energy by turning off energy using devices, and involve the general public. The industry has failed to promote opportunities to save energy and it will be through pressure from a better educated public that pressure will need to be brought to bear. The simplest of energy efficiency opportunities is to turn off appliances and energy using devices when not required, but, as is the case with street lighting, many are under the misapprehension this is not viable. There have been concerns that heated towel rails are a significant standing load in many houses, but a simple requirement to incorporate a timer with every sale and to require electrical tradespersons to fit them would substantially reduce this load.

At a governance level, the profile of electricity efficiency needs to be raised at least some way towards the importance given to electrical safety, and incorporated within the standard training regimes for electrical trades.

If energy efficiency is to be successfully implemented, it should be within a regime that:

- Defines the appropriate level of service required, not just at peak times but as circumstances change.
- Provides that level of service as efficiently as possible, within industry accepted performance standards.
- Maintains that level of service under an appropriate monitoring scheme using accurate measurement.
- Includes an obligation to review the need for the service regularly and to restore the minimum acceptable level of service when monitoring has determined that level of service is not being provided.

These are well recognised asset management principles. They are well encapsulated, for example, by the UK Institute of Asset Managers who have led the development of a specification for the optimized management of physical infrastructure assets, known as PAS (Publicly Available Specification) 55. (See attachment)

35. A number of Government agencies have responsibilities that support improved energy efficiency in the stationary energy demand sector. These include EECA, the Commission, MED, MfE, DBH and Housing New Zealand Corporation.

It is important all agencies work together effectively. In the short term the agencies listed above can provide some degree of co-ordination, but if the objectives of the NZES are to be achieved, then other agencies representing other sectors must be involved.

- The education sector, at all levels need to be involved. It is well known that even primary school children can, in the right environment, influence parents behaviour. As people move through the education sector, a minimum level of understanding would enable the general public to take greater responsibility for their energy use and question the electricity industry when they see inefficiencies. There is potential to provide lifetime learning for citizens to “self assess” their energy consumption and to use simple analytical tools when considering alternative energy solutions.
- Industry governance. At an industry level, electrical worker training in energy efficiency should be given a higher profile. However energy efficiency needs to become a part of everyday thinking for all New Zealanders, and care is required not to “lock up” expertise within a framework that restricts implementation to “approved” persons.
- Transport Sector. A holistic view needs to be taken, whereby the time, cost and environmental impact of every trip is considered. The success of the Northern Busway project in Auckland demonstrates that with a well thought out and innovative approach, the public will respond. Good lighting for public facilities along with suitable security measures may be necessary to ensure other benefits such as reduced use of single driver motor vehicles.

- Research and Development. The Foundation for Research Science and Technology has limited funds, but could play an important role in establishing demonstration systems using innovative ideas. Whereas this may appear to be similar to work undertaken by others, FRST have a longer term focus and could act as a “clearing house” for innovative ideas before they have reached commercial viability.

36. EECA and the Commission have a common objective: to promote the use of electricity in an efficient and environmentally sustainable manner. In undertaking its electricity efficiency activities, the Commission should work closely with EECA. It is important that the Commission’s activities complement the work of EECA and that duplication of effort is avoided. Through its membership of the Senior Energy Officials Group, the Commission will work with the group to develop priority energy efficiency programmes and will reflect this in its work programme to promote the efficient use of electricity.

See previous comments. From a public perspective, the differences of responsibilities between agencies should be clear and it would be useful if consumer groups were to be consulted to ensure the differences are well known. We note that the draft GPS proposes EECA have a more significant role in implementing energy efficiency programmes. This will go some way towards removing public misunderstanding as to current responsibilities.

41. As part of its research and information activities, the Commission, in conjunction with EECA, has undertaken a comprehensive review of the potential of electricity efficiency to contribute cost-effectively to achievement of the Government’s electricity objectives, including estimating the level of investment required to realise this potential. This report should continue to underpin development of proposed electricity efficiency activities.

When considering retrofitting energy efficiency opportunities in existing installations with an expectation of limited or no subsidy funding, the importance of accurate information in building sound business cases that must compete with other business opportunities needs to be recognised. It is relatively easy to list various technologies and rank them according to the value of benefits. However this type of analysis will need to introduce assumed operating load profiles which may differ from the load profile applied for a particular application. This report is adequate for determining best use of subsidy funds but is insufficient to determine how effective technologies will be in a normal business environment.

In order to make various energy efficiency opportunities commercially more attractive, there are a number of market mechanisms that can be used. Generally a good business case includes a high level of certainty before the commitment of significant resources. Where an opportunity involves export of power from a customer, then assured returns from exported energy for a significant time may be necessary. Uncertainties as to technical connection requirements and network security issues can also affect the business case for an energy efficiency opportunity.

Discount rate

42. The Government has adopted a discount rate of 5 percent real per annum for cost-benefit analyses of energy efficiency and other measures under the NZES and NZEECS. This lower discount rate reflects the long-term nature of benefits, including those designed to address climate change and other environmental externalities.

For initial implementation of energy efficiency opportunities, this represents a good initial benchmark. However within a policy statement we believe a more flexible use of the discount rate should be used. Clearly whilst the number of projects are limited, a relatively

low threshold to allow subsidy funding to be provided is acceptable. However in the longer term we would expect the benefits of energy efficiency initiatives to be self sustaining and there should be a mechanism for rationing available funds. A prospective increase, or series of increases, in the discount rate hurdle would have the effect of encouraging uptake whilst the rate is low and provide a mechanism to ration available funds.

In a more formal business environment the internal rate of return of different opportunities would be used, and the cut off made dependent on available funds.

45. The Commission should also put in place arrangements and programmes to promote efficiency in the following components of the electricity sector: (comments on clauses 47 – 49 only)

Wholesale market

47. The Commission should facilitate and promote stronger demand-side participation in the wholesale market in support of the Government's overall objectives.

More innovative metering and load control initiatives should be adopted. Flexible payment methods for such systems could be introduced into tariff schedules to allow access to greater demand side participation, with payment coming from the savings made.

Modern UHF radio or other communications systems have the potential to dynamically control significant numbers of such systems, responding far more rapidly to supply side variations than is possible with ripple control systems, something that will become increasingly important as the proportion of wind generation increases.

A particular area of interest to our company has been street lighting. Although it consumes less than 1% of all electricity generated, it represents a very significant portion of a typical councils electricity account. In general, lighting is provided to meet the assessed requirements at peak times, and maintained at that level all night, every night. Systems have been in use for many years to reduce lighting levels in supermarket and other car parks when activity reduces, but have not been adopted for street lighting. Engineers are loath to consider dimming or part night switching as this requires innovative interpretation of the prescriptive design standards, applying different categories as conditions change. Furthermore, the ratio of fixed to variable costs often reduces the financial benefits of introducing such schemes.

Conveyance

48. Electricity should be conveyed efficiently on the national grid and distribution lines. Transmission and distribution companies should have better incentives to manage transmission and distribution losses and constraints. The Commission should promote pricing structures that provide appropriate signals to manage those losses and constraints.

Most of NZ's networks are based on 11kV as the MV reticulation voltage. This was the "de facto" standard when these networks were established and has served NZ well. It was based on a practical limit determined by use of oil based switchgear available at the time. Oil based switchgear has now been superseded by more advanced switchgear that can switch 22kV with equipment of similar cost to its 11kV equivalent. Some innovative network companies have adopted 22kV as their new standard, but it will take many years for the lines and transformer assets to be upgraded. The changing demands of a modern society

with the potential for significant distributed generation mean that there are significant benefits in considering a move to 22kV as the new standard.

- Overall costs for the initial installation of a 22kV based network compared with an 11kV network are lower and represent a better use of resources. At the macro level fewer zone substations are required.
- When used in conjunction with a modern SCADA (System Control and Data Acquisition system) to operate remote switches, security of supply is not compromised.
- Energy losses incurred on the network are significantly reduced.
- To the lay person there is almost no noticeable visual difference between overhead 11kV and 22kV reticulation.

In some areas, the use of severe pricing signals is deterring new developments and there needs to be a mechanism to share new infrastructure development costs across a much wider future customer base in much the same way as costs were shared when areas were first reticulated in the mid 1900's under the Electricity Supply Regulations of the day.

End-use

49. The Commission should promote and facilitate the efficient use of electricity by end users. It should pursue this objective in multiple and mutually-reinforcing ways, including:

- *by providing financial incentives for investment in electricity efficiency where it is cost-effective to do so and in response to market failures and barriers*
- *by promoting cost-reflective pricing*

In a wider energy context the use of distributed generation, see below, should be encouraged. Where it is in a customer, or group of customers, best interests, there should be mechanisms to require monopoly network service providers to release assets such that they can introduce changes to access benefits. This will allow innovative solutions to be implemented in situations where the incumbent network provider will only provide a "business as usual" solution. For example, it may be possible for a group of consumers to combine resources to introduce local generation and to collectively control their loads to minimise the need for normal network services.

In some cases, the use of alternative energy solutions may be more appropriate than using mains based electricity. Regulations should encourage the most appropriate solutions based on sound economic and sustainable principles.

Distributed generation

126. Distributed generation is generation which is connected to local distribution lines rather than the transmission grid. It is expected to play an increasingly important role in meeting electricity demand as the cost of smaller-scale and new renewable technologies continues to decline. Distributed generation can improve security of supply by creating diversity of fuel types, locations and technologies, and, where appropriately sited, helps reduce the need for transmission and distribution upgrades. Accordingly, it is important that there are no unnecessary barriers to its development.

An aspect of distributed generation that is not always recognised is that in many cases electricity is no longer the primary product from the installation. In many cases this can be process steam, hot water or hot gases for drying product where the provision of this service is related to receiving the correct quantity of this output. Siting of DG installations will not always be determined to suit the transmission of distribution infrastructure, but can still provide a useful contribution. Standby generation could be made available to support the electricity system, but it does not benefit one single party. When considered in isolation a single generator has a significant risk of not being available when required, but by aggregating several generating units across several sites the availability of most units can be assured.

Access to lines

127. Electricity Governance (Connection of Distributed Generation) Regulations 2007 enable connection of distributed generation where this is consistent with network connection and operation standards. The regulations provide a process for applications for approval to connect and regulated terms of connection. The Commission is responsible for administering these regulations and for proposing amendments as required.

The current regulations allow network companies to turn down a connection application when that application causes technical problems that a “prudent” network operator finds unacceptable. If a distributed generator is deemed a normal customer then they should have the right to connect. Customer expectations are changing, and if a network has reached capacity and there is clearly potential for other future customers, then it should be upgraded, if necessary to a higher reticulation voltage. It may be necessary to define in legislation when a network has reached capacity based on its ability to ensure adequate quality of supply without exceeding appropriate network loss benchmarks.

If voluntary measures fail to provide adequate supplies of electricity to developing areas, then it may be necessary to introduce an independent technical auditing regime to ensure networks that are “fit for purpose” are constructed.

In the words of PAS 55 “Are we “mortgaging the future” in our efforts to obtain short-term gains?”

128. The Commission should investigate the provision of guidelines or standards for domestic scale distributed generation to reduce regulatory compliance costs and improve the safety of connections to local networks.

We recommend the use of national guidelines and standards that will ensure they are common throughout the country.

Purchase of surplus generation by retailers

129. The Commission should ensure reasonable terms and conditions in model contracts for purchase of small electricity surpluses by local retailers from generators with generation units capable of generating up to 40,000kWh over a year. The Commission should investigate and make recommendations:

- on whether model contracts should specify pricing principles; and*
- on how the model contracts should require itemised billing (showing imports and exports) by 2009.*

If distributed generation is to make a significant contribution to the NZES, then many proposals need the certainty of a minimum return on exported electricity. Whilst the German “feed in” tariff regime may be excessively complex for New Zealand, there is nothing to prevent a minimum baseline being established, with returns above that baseline being at the customers risk. Possibly all large retailers should be required to include a minimum return for electricity provided from distributed generators within their tariffs unless that generator opts out. We believe it would be possible to introduce this measure for smaller installations before the end of 2008, and that the proposed model contracts should be considered as the “opt out” option when ultimately developed.

131. The Commission should recommend regulations or rules if voluntary arrangements are unsuccessful in achieving the policy outcomes the Government seeks.

The use of “light handed” regulations to implement reforms in the industry were unsuccessful and it has been necessary to establish the Electricity Commission under the present regulatory framework. We believe the culture has not changed, particularly in the monopoly areas, and that voluntary arrangements will not work. Therefore we believe carefully targeted amendments to the current regulations in key areas are essential if meaningful progress is to be made.

Closing Remarks

The electricity industry needs to work towards a co-operative environment with close links with its customers. The NZES and NZEECS are significant in that they are expected to empower these customers to demand improvements in the way their energy, including electricity, is supplied, and this GPS on Electricity Governance should encourage this. It is unfortunate that customers have not been well represented in the consultative processes concerning industry governance, but this is not surprising. Where all of an organisations business is purely concerned with any aspect of electricity supply, it will suffer the full consequences of any adverse changes, and consequently they can direct significant resources to protect their interests. However, where electricity only affects a part of the business, other issues will normally dominate their economic performance, and the ability to direct resources to issues that do not have an immediate impact will be severely limited.

A significant concern with the present situation is that those responsible for the customer network connections no longer have a direct relationship with those customers, and the service provided does not always meet the customers expectations. Furthermore, the customers are not always aware of the innovative new technologies now available that will become increasingly important to achieving the objectives of the NZES and NZEECS. Hence we believe the importance of education in energy efficiency and electricity use should be recognised in this GPS.

This GPS on Electricity Governance recognises there will be “trade-offs between certainty and clarity on the one hand and encouraging and allowing scope for innovation on the other”. This will require a paradigm shift away from applying “business as usual” practices which do not encourage innovation. We recommend that the UK Institute of Asset Management Publicly Available Specification (PAS) 55 - Specification for the Optimized Management of Physical Infrastructure Assets be incorporated in this GPS as the basis of required best practice to ensure innovation is encouraged.

We trust these comments will enable the GPS on Electricity Governance to be adapted to improve recognition of the importance of electricity, used innovatively, as an essential service to the electrical industries customers. We believe this GPS is important as it will set the direction for the electricity industry to assist its customers to meet the objectives of the NZES and NZEECS for the benefit of the country.

Questions on this submission should be directed to the undersigned.

Yours sincerely

A handwritten signature in black ink, appearing to read 'R Loveless', written in a cursive style.

Roger Loveless,
B.Sc, Grad Dip. B.S, C. Eng (UK), M.I.E.T, M.I.P.E.N.Z,
Managing Director

Encl: Asset Management Questions.

Asset Management Questions.

The following basic asset management questions are quoted from the UK Institute of Asset Management, Publicly Available Specification (PAS) 55-2: 2004, clause 0.3 Specification for the Optimized Management of Physical Infrastructure Assets.

In order to achieve its organizational strategic plan and provide the assurance its stakeholders seek, an organization needs to ask and be able to answer the following key questions:

- *Do we know what assets we have, where they are, what condition they are in, what function they perform and their contribution to value? Do we know the quality of our reference data?*
- *Do we know what we want from our assets in the short, medium and long term?*
- *Can our assets deliver our business objectives cost-effectively?*
- *Are we getting the most value from our assets? (How could we get more value for money from them?)*
- *Do we have enough capability? Have some of our assets become redundant, underused, unprofitable, and too expensive? Are the asset's condition, performance and capabilities being maintained at optimum levels of investment?*
- *Are we confident that the risks of our assets causing harm to people and the environment are tolerable and at organizational/legally accepted levels?*
- *Is our asset related expenditure (capital investment and operating costs) insufficient, excessive or optimal and correctly assigned across asset classes? Can we readily evaluate the benefits (performance, risk reduction, compliance) of proposed work or investment and, conversely quantify the total cost/risk impact to the business of **not** performing such work or **not** investing?*
- *Are we "mortgaging the future" in our efforts to obtain short-term gains?*
- *Have we given due consideration to the other aspects of the business that affect our asset management plans, such as people, knowledge, finance and intangible assets? Conversely, have we considered the impact of our asset management plans on these aforementioned aspects?*
- *Do we review the appropriateness of our asset management strategy in the light of changes in the business environment?*
- *Are we continually improving the asset management system (processes) and asset management performance, and realizing the benefits of the improvements? Do we know what and where improvements will be the most effective?*
- *Can we answer all of these questions confidently, with a clear audit trail, and demonstrate the answers to our stakeholders?*