

# **Market Design Review**

**Submission on the Electricity  
Commission's Issues Paper 'Survey  
of Market Performance' from Powerco**

**20 July 2007**

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## **Executive summary**

Powerco values the opportunity to provide a submission in response to the Electricity Commission's (EC's) Market Design Review Issues Paper ("the Issues Paper"). Powerco acknowledges and applauds the amount of work which has gone into collating such an extensive range of data in the preparation of the Issues Paper. Powerco's objectives for engaging in this process are to offer constructive suggestions and recommendations that enable pragmatic approaches and solutions to be put in place to improve the performance of the electricity market.

### **Problem definition**

The Review seeks to examine the detail of the current design, and identify the areas that are performing satisfactorily and those where improvements can be made. Powerco submits that there is either a step missing in the Review process or that a part of the Review has not been sufficiently transparent to allow all parties to participate meaningfully and with confidence. Namely, that the desired outcomes from a high performing electricity market and the assumptions underpinning the Review have not been clearly articulated.

The lack of clarity around desired outcomes and attributes of a high performing market (also assessment criteria) is a critical element missing from the Review process of "*identifying the areas that are performing satisfactorily and those where improvements can be made*".

### **Scope of Review**

We are surprised at the limited scope of the review and submit that the changing regulatory and policy environment, technology changes and the EC's own statutory obligations make it essential and unavoidable that the starting point of the Market Design Review is broad and includes all aspects of the supply chain including transmission and distribution. Without developing a broad and deep understanding of the wider sector the EC risks cutting across other initiatives and missing the opportunity to articulate the desired outcomes of a high performing electricity sector.

To be manageable it is inevitable (and desirable) that the focus of resulting work streams is narrowed. However, in order for system wide benefits to be identified and captured (and to avoid counter-intuitive outcomes), the desired outcomes for the "whole" need to be clearly articulated and kept in mind throughout the process.

## **Market Information**

The Issues Paper is subject to a general caveat about information completeness and accuracy; it is therefore surprising that the Issues Paper does not tackle the question of information availability and quality in a substantive way. This would seem a pre-requisite to the Review if the EC is to determine whether the market meets whatever criteria it confirms for its evaluation.

The quality and consistency of market information is an issue for the sector in a range of settings. Powerco recommends that the EC initiate an inter-agency process which looks at information gathering for the sector with the aim of developing a common set of indices across the sector to inform decision makers, investors and others interested in the performance of the market.

## **Wholesale market**

Powerco does not have a wide ranging involvement in the wholesale market and our specific comments are limited to the reserves market and frequency keeping.

## **Demand-side management**

Powerco agrees with the EC's explanation of demand-side management and the analysis of pre-requisites for a demand-side response to occur. We believe incentives for lines companies to provide a demand-side response are not transparent and are reducing, as a result of the current threshold regime and changes to the transmission pricing methodology.

Powerco believes that in the immediate term there is a high priority piece of work to understand the quantity of load available for demand-side participation and the range of prices at which this load would become available. Additionally current demand-side work-streams should be amalgamated under one project in order to ensure system benefits are captured.

## **1 Introduction**

Powerco is New Zealand's second largest gas and electricity distribution company. Our network spreads across the upper and lower central North Island servicing over 400,000 consumers, which represents forty six percent of the gas connections and sixteen per cent of the electricity connections in New Zealand.

Powerco values the opportunity to provide a submission in response to the Electricity Commission's (EC's) Market Design Review Issues Paper ("the Issues Paper"). Powerco acknowledges and applauds the amount of work which has gone into collating such an extensive range of data in the preparation of the Issues Paper. Powerco's objectives for engaging in this process are to offer constructive suggestions and recommendations that enable pragmatic approaches and solutions to be put in place to improve the performance of the electricity market.

## **2 Submission Structure**

The submission starts by describing the context for the review and then considers the Problem Definition as set out in the Issues Paper. Closely related to the Problem Definition is the Scope of the Review, and this is the next issue addressed in the submission. The key points for Powerco are that: there needs to be better definition around the desired market outcomes; and the Review needs to be clearly contextualised within the electricity sector's current and proposed regulatory and policy environment. Powerco submits that the EC has the mandate to take this broader perspective.

The remainder of the paper considers specific issues beginning with data quality and information. We have made some specific points regarding the retail and wholesale markets and demand-side management. Powerco has only provided comments in those areas where we believe we have relevant knowledge and experience to constructively contribute to the discussion.

### 3 Context

The Issues Paper has been prepared within a wider context of significant change in terms of: the regulatory and policy environment; and emerging, and possibly disruptive technologies in the energy sector. The EC's Review should reflect the wider environment and the outcomes sought by other agencies including the:

- a. Draft NZ Energy Strategy consultation – *“Energy policies that will: a) protect security of supply; b) promote energy efficiency measures; and c) promote low emissions energy sources.”*
- b. Commerce Act review – *“The primary objective of reviewing the regulatory control provisions of the Act is to ensure that economic regulation in New Zealand is consistent with providing for the long-term benefit of consumers within New Zealand.”*
- c. Draft Energy Efficiency and Climate change strategy consultations
- d. Commerce Commission investigation of electricity generation and retail sectors
- e. Review of obligation to supply – section 62. *“The objective of the review is to consider what, if any, arrangements should be put in place to ensure affected communities continue to have an electricity supply after 2013.”*
- f. Electricity (Disconnection and Low Fixed Charges) Amendment Bill – Bill reflects concerns around industry conduct and market behaviour around disconnection processes.

This wider context and the EC's own statutory obligations make it essential and unavoidable that the starting point of the Market Design Review (“the Review”) is broad and includes all aspects of the supply chain including transmission and distribution. Without developing a broader and deeper understanding of the wider sector the EC risks cutting across other initiatives and missing the opportunity to articulate the desired outcomes of a high performing electricity sector.

The EC's principal objectives relate to outcomes from the integrated electricity supply chain, which are to:

- *ensure that electricity is produced and delivered to all classes of consumers in an efficient, fair, reliable and environmentally sustainable manner; and*

- *promote and facilitate the efficient use of electricity.*<sup>1</sup>

Given that these objectives relate to the outcomes for the entire industry, the exclusion of distribution and transmission from the scope of work outlined in the Issues Paper is surprising.

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<sup>1</sup> *Statutory Objectives for the Electricity Commission in the October 2006 Government Policy Statement on Electricity Governance* at [http://www.med.govt.nz/templates/MultipageDocumentPage\\_\\_\\_\\_23098.aspx](http://www.med.govt.nz/templates/MultipageDocumentPage____23098.aspx)

## 4 Problem definition

A key driver for the development of the Issues Paper was the Government's 2006 "*examination of the performance of the current electricity market framework, and comparison with the outcomes that might be expected under a range of alternative arrangements*"<sup>2</sup>. The Government concluded that the current market framework should be retained, but that opportunities for improvements should be pursued<sup>3</sup>. The current Review sets out to "*explore these opportunities for improvement*". The Review seeks to examine the detail of the current design, and identify the areas that are performing satisfactorily and those where improvements can be made (paras 1-3)<sup>4</sup>.

Powerco submits that there is either a step missing in the Review process or that a part of the Review has not been sufficiently transparent to allow all parties to participate meaningfully and with confidence. Namely, that the desired outcomes from a high performing electricity market and the assumptions underpinning the review have not been clearly articulated.

The Government's decisions<sup>5</sup> made under the auspices of its Electricity Market Review are part of the foundation for the EC's review (para 14). It is therefore useful to look at the basis for those decisions as they provide some guidance as to the desired market outcomes and assumptions underpinning this current review.

The Government considered the current arrangements against two wholesale market alternatives. They were assessed against security of supply, ability to achieve competitive and efficient pricing and implementation costs and risk, in comparison to current arrangements<sup>6</sup>. The Cabinet Paper explicitly acknowledges<sup>7</sup> that a wider range of economic, social and environmental objectives could have been selected. It was decided that "*the main assessment criteria should be economic, as social and environmental goals could be pursued under any potential arrangements, although the mechanisms used would differ under different arrangements*."<sup>8</sup> The assessment criteria used in the Cabinet Paper are attached in Appendix A.

The criteria used by Government don't give a complete picture of sector performance but they do provide a transparent lens through which to assess the performance of the sector and make the assumptions behind the review explicit. They also give some sense of what Government considers a high performing electricity market should deliver.

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<sup>2</sup> Para 4, Cabinet Paper, Electricity Market Review: Summary of Review, Paper One, December 2006

<sup>3</sup> Ibid, para 7

<sup>4</sup> Unless otherwise stated paragraph references are from "Issues Paper – Survey of Market Performance, Market Design Review.

<sup>5</sup> Published in a series of Cabinet Papers released in December 2006.

<sup>6</sup> para 10, Cabinet Paper, Electricity Market Review: Summary of Review, Paper One, December 2006

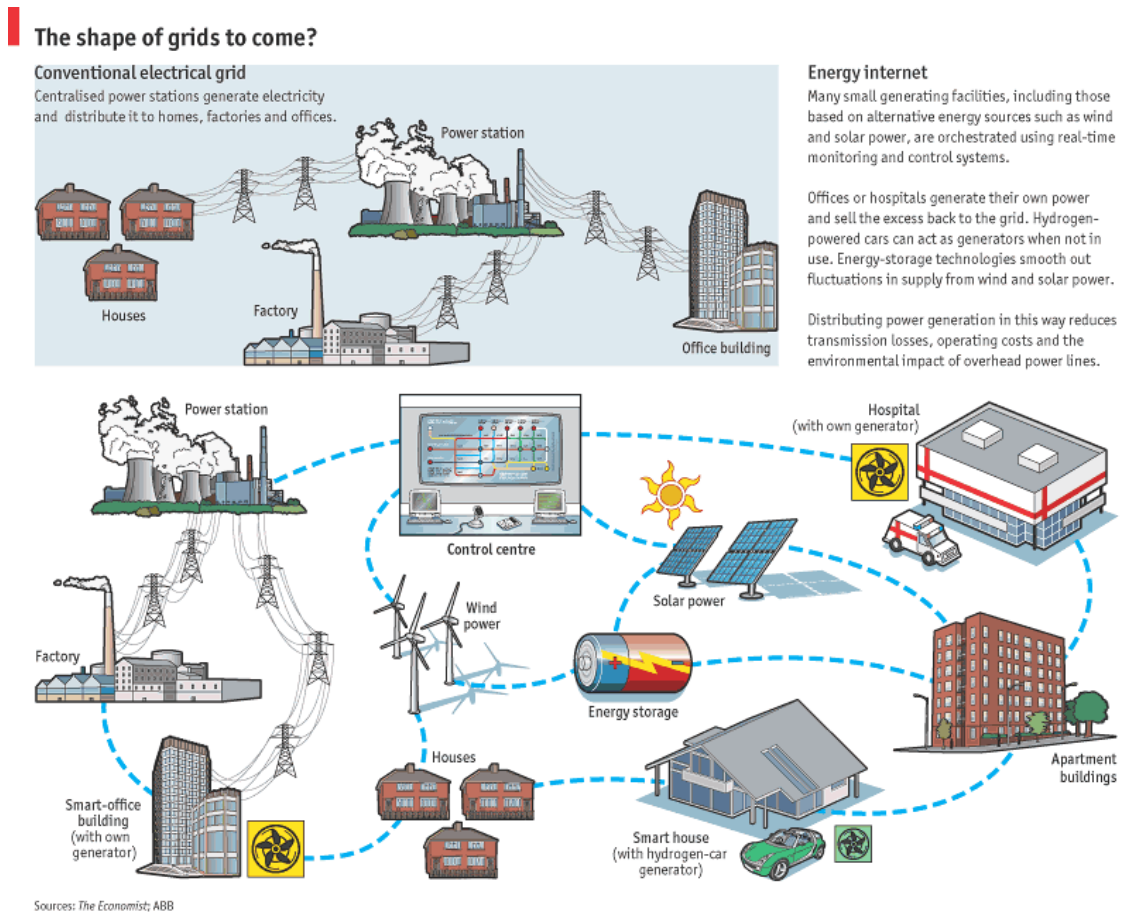
<sup>7</sup> Ibid, para 24

<sup>8</sup> Ibid, para 24

The Issues Paper as drafted does not provide this same level of clarity in terms of the outcomes and attributes sought from a high performing market. From Powerco's perspective this lack of clarity around desired outcomes, attributes and assessment criteria is a critical element missing from the process of "identifying the areas that are performing satisfactorily and those where improvements can be made" (para 3).

Powerco sees this Review as an opportunity for the EC to develop a clear picture of what an evolved and future-facing electricity market would look like and how its health and continued development can be ensured.

By way of example, in 2004, *The Economist* newspaper considered that *More and bigger blackouts lie ahead, unless today's dumb electricity grid can be transformed into a smart, responsive and self-healing digital network—in short, an "energy internet"*. Their vision of an evolved and future-facing electricity market is one of bidirectional flows on low voltage networks, embedded generation and considerable consumer and demand-side involvement in the supply and maintenance of reliable power.



**Figure 1 - The shape of grids to come?<sup>9</sup>**

<sup>9</sup> From *Building the energy internet* in *The Economist*, Mar 11th 2004

The views espoused in the Economist would seem consistent with the Government's wider ambitions as outlined in the draft New Zealand Energy Strategy and related documents but is not considered at all in the EC's Issues Paper.

Other commentators will have their own visions. It is appropriate that the EC develops its own vision as the Government's agency overseeing New Zealand's electricity industry and markets.

## **Recommendations**

The proposed process for the Review is to: define the problem; identify the solutions; identify preferred solutions; and implement.

It is recommended that the Review Process is revised to explicitly include as a first stage:

- a description of what a high performing electricity market would look like;
- a set of measurable attributes of a high performing market; and
- a transparent set of assessment criteria.

## 5 Scope of review

The Government's review of the "*performance of the current electricity market framework*" was wide-ranging the EC has chosen to limit the focus of its review to the retail and wholesale electricity segments as these are to quote "*the areas directly within its field of influence*". There is an acknowledgement of the need "to consider the arrangements in other segments to the extent that they materially affect competition in the areas of direct attention" (paras 9-11).

The EC then further narrows the scope of the review to "market design issues – i.e. the set of rules and other arrangements that govern the interactions between buyers and sellers" (para 12).

Electricity Governance Rules are intended to provide a framework to give confidence that all players are participating on an equal footing. However, they are also intended to support and enable the delivery of wider policy objectives for the whole sector. It is essential then that the relationships and inter-dependencies of the wholesale and retail market with other parts of the sector (supply chain) are well understood before rules are reviewed and amended.

While acknowledging the difficulties of considering the sector as a whole, breaking the system into silos too early in the Review process risks mis-identification of problems and solutions. This Review provides an opportunity for the EC to consider the sector as an integrated system and to articulate desired outcomes and identify and consider systemic problems and solutions. To be manageable it is inevitable (and desirable) that the focus of resulting work streams needs to be narrowed. To identify and capture system wide benefits (and to avoid counter-intuitive outcomes<sup>10</sup>), the desired outcomes for the "whole" need to be kept in mind throughout the process.

### Recommendation

It is recommended that:

- i. Given the broad mandate of the EC over the entire industry and the fact that it is accountable for outcomes dependent on the entire supply chain which includes transmission, distribution and the demand side, the Review must be set in a much broader context than currently covered by the current issues paper.
- ii. The inter-linkages between work-streams developed from this Review be clearly identified and overall sector objectives are not lost.

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<sup>10</sup> Eg New transmission pricing dis-incentivises networks such as Powerco to provide a demand side response. See comments on demand-side participation.

## 6 The Electricity Commission's mandate to take a wider perspective

The EC's mandate is set out in the Electricity Act, section 172N, Principal objectives and specific outcomes, section 172N, Functions of Commission<sup>11</sup> and the Government Policy Statement on Electricity Governance (October 2006). These sections provide the EC with a wide scope to act and acknowledge the level of specialist expertise which resides within an agency such as the EC. For the EC to effectively deliver on specific outcomes sought there needs to be a fundamental understanding of the "whole" and how the "parts" work together.

The following table derived from the EC's statutory objectives provides some examples and ideas of how sector performance could be considered. Presumably the EC applies similar criteria in its decision making roles.

Element	Objective	Assessment Criteria
Security, reliability and quality	21 <sup>st</sup> century electricity supply to all consumers	SAIDI SAIFI EGR compliance
Prices	Prices are at such a level that investors have an incentive to maintain and replace assets  Prices reflect full cost of delivered service and are subject to downward pressure.	Company profits levels at the very least meet the company's complete cost of capital.
Demand-side participation	All customers and electricity market participants have the ability and incentives to provide a demand-side response	% of customers (as well as load) who respond to price  % of installed meters that are smart meters
Level of competition Generation	Robust competition	% of projects in which new technologies through innovation not through market power
Level of	Robust competition	Average generation

<sup>11</sup> See Appendix B

<b>Element</b>	<b>Objective</b>	<b>Assessment Criteria</b>
competition Wholesale		prices reflect long run marginal cost
Level of competition Retail	Robust competition	Spread in retail prices available to customers  Customer satisfaction etc
Investment	Profit levels meet or exceed investors cost of capital to ensure financial capital maintenance	Replacement investment is adequate to meet future (21 <sup>st</sup> century) demand
Environmental sustainability	Carbon neutral electricity sector	Tons of carbon emitted per unit of electricity consumed
Social responsibility	Fuel poverty is eliminated	% of consumers with a healthy and comfortable living environment  Number of disconnections

## 7 Market information

The Issues Paper opens with the caveat:

*“In preparing this paper, it has been necessary to rely on information from a variety of sources and some information is incomplete or missing. Accordingly, the Electricity Commission cannot confirm the accuracy of information and analysis presented in this report, nor accept any responsibility for any omissions or errors.”<sup>12</sup>.*

In March 2006 the EC consulted on *Indicators of Retail Market Activity in the New Zealand Electricity Market*, explaining that:

*“Paragraph 10 of the Government Policy Statement on Electricity Governance (GPS) identifies that ‘high quality information is essential to efficient markets. The Electricity Commission (Commission) should give high priority to ensuring relevant information is made available to market participants and to the public at large on matters relating to the electricity sector.”*

and that:

*“In accordance with this aspect of the GPS, the Commission’s primary objective (for the purpose of this paper) is to ensure that relevant information regarding activity in the New Zealand electricity retail market is available to the Commission, market participants, and the general public.”<sup>13</sup>*

Given the general caveat about information completeness and accuracy, it is again surprising that the Issues Paper does not tackle the question of information availability and quality in a substantive way. This would seem a prerequisite to the Review if the EC is to determine whether the market meets whatever criteria it confirms for its evaluation.

Information and knowledge are pivotal to investment in the sector. The EC already has a critical information and decision making role in supporting transmission planning processes. Powerco submits that there would be merit in the EC initiating an inter-agency project which looked at information gathering for the sector with the aim of developing a common set of indices across the sector to inform decision makers, investors and others interested in the performance of the market. Sector participants would need to be actively involved in this process to ensure that the data requested was available and that it would provide the most relevant data to build up sector indices.

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<sup>12</sup> (Market Design Review – Survey of Market Performance, page ii)

<sup>13</sup> Consultation Paper *Indicators of Retail Market Activity in the New Zealand Electricity Market* at <http://www.electricitycommission.govt.nz/consultation/dashboard>.

Agencies that could usefully be involved in this process include: the EC, the Ministry of Economic Development, the Commerce Commission and the Energy Efficiency and Conservation Authority (EECA). The EC already has memoranda of understanding with the Commerce Commission and EECA which could be amended to support this process. We think this approach would likely require some amendment to current information disclosure requirements.

The process would be of most value if there is a clear and agreed set of objectives and attributes of a high performing market. Given a clear set of objectives and attributes well developed indices could act as key performance indicators.

There would be a number of tangible benefits to this approach:

- i. Sector participants would have greater confidence that data and information requests would not be duplicated and that the data would be shared and understood across Government agencies.
- ii. Over the medium term the time and costs involved in providing data would reduce for sector participants
- iii. Government agencies would be working from a common set of data and indices.
- iv. The process of working together to develop a common set of data and indices may improve the shared understanding Government agencies have of how to deliver on the Government's desired sector outcomes.
- v. The development of wider sector knowledge would assist the economic regulatory regime applying to the distribution and transmission services. The role of this information would be to inform decisions about investments and provide the energy sector context within which the regulated entities are operating and investing.
- vi. Investment trends such as new developments, improvements to efficiency and the transitions to new technology would become clearer. This increased clarity would help to better inform decision making and to further improve understanding of investment requirements.
- vii. The market information is critical for transmission and distribution entities operating within economic regulation as the regulator approves the investment decisions. However, it also informs the investment decisions of participants in generation and retail because the sector is a network.

## **Recommendation**

It is recommended that the EC:

- i. Initiate an inter-agency process which looks at information gathering for the sector with the aim of developing a common set of indices across the sector to inform decision makers, investors and others interested in the performance of the market.

## **8 Wholesale market issues**

Powerco does not have a wide ranging involvement in the wholesale market so comments in this section are limited to the reserves market and frequency keeping.

### **Reserves market**

The existing reserves market does have some competition (fig 83 shows 11 providers for fast instantaneous reserves in the North Island) but Powerco submits that since more stringent data requirements came into effect on 1 November 2004 competition has been unnecessarily stifled.

These data requirements were historically met by Transpower's SCADA and, in Powerco's opinion, this could have continued. However since the 2004 changes each ancillary service provider is required to provide this data in addition to the Transpower SCADA data. Although there are transition arrangements in place any new reserves provider is required to supply this data from day one.

Also there is no set approach for allowing new providers to prove their Interruptible Load (IL) capabilities. Powerco has 5 of its 25 grid exit points in the reserves market under a contract negotiated by United Networks Limited (pre 2004). When we re-entered the market with these grid exit points our profiles were re-evaluated. IL is by nature difficult to predict and although we agree there is a need for the System Operator to be confident in the reserves provided Powerco could see more value in refining the IL profiles once in the market and seeing actual events than the scrutiny provided by the System Operator before starting to offer into the market.

Over the past two years Powerco has attempted to add grid exit points to the contract. We have been unable to meet Transpower's stringent data requirements. While the market requires accurate data it would be worthwhile investigating whether there are more efficient ways of the information being provided. For instance could Transpower's SCADA data be used rather than there being duplicate metering technology at every grid exit point? And is there a standard method of evaluating new providers?

### **Frequency keeping**

At the Wellington seminar the System Operator (Doug Goodwin) asked whether New Zealand should continue to maintain frequency in the way it does. The United Kingdom and Ireland, for example, take a different approach. Frequency keeping is a legacy from the days of synchronous clocks and there may be no need to maintain the stringent limits placed on frequency in New Zealand.

Although Powerco does not see these as urgent matters we would like to see them included in the EC's medium term work programme.

### **Recommendations**

It is recommended that:

- i. Consideration is given to ways of making the reserves market easier to participate in. For example could the information requirements be amended?
- ii. Consideration is given to whether the current approach to frequency keeping is maintained.

## 9 Demand-side participation

The chapter on demand-side participation begins with an explanation of what demand-side participation actually is and a description of the pre-requisites required to enable a demand-side response. The pre-requisites identified are:

- i. information on expected future conditions;
- ii. presence of a benefit from altered usage;
- iii. ability to capture some benefit from altered usage; and
- iv. ability to change usage in required timeframe.

Powerco agrees with this analysis and is particularly interested in the third point: the ability to capture benefit from altered usage. This is discussed further below.

The paper makes the point that "*All categories of users .. appear to be potential beneficiaries from demand response, given that spot prices have in the past averaged around \$150-\$200/MWh ..*" (para 304). Although it is true that all consumers can benefit from reduced electricity bills by reducing their consumption, only those directly exposed to the spot market will see significant and immediate benefits (i.e. large users).

For lines companies the incentives (or "Ability to capture some benefit from altered usage") to provide a demand-side response are not transparent. Lines companies load management practices tend to reflect the constraints within their networks rather than commercial benefits from limiting load.

Lines companies do not trade electricity and there is no commercial value from shifting load from periods of high spot prices to lower priced periods. Although there may seem to be evidence that lines companies respond to spot electricity price, they don't. There are times when high prices coincide with high network loads but this does not always hold and the lines company demand-side responses results from network overload rather than price.

Para 326 refers to lines companies managing hot water load during times of network peak to enable them to manage transmission costs. Transmission charges are a "pass through" under the Threshold Regime. Any savings in transmission costs that may arise due to management of transmission peaks are required to be passed through to consumers, therefore there is no commercial benefit to lines companies from managing transmission charges. There is some incentive to manage transmission peaks to ensure that a variation in

total transmission charges does not cause a Threshold Allowable Revenue.

From 1 April 2008 the transmission peaks are based on historic levels and there is no intra-year variable component to transmission charges (at least not the Transpower part). Lines companies will know transmission charges in advance and will be able to set their prices to ensure no breach of their Threshold Allowable Revenue due to variation in transmission. The use of load control to manage transmission peaks to ensure compliance with the Threshold Regime will cease to exist.

The adoption of the concept of regional coincident peaks in the Transmission Pricing Methodology reduces the direct control a single lines company has over when its peaks occur. The effect of this on the use of load control by lines companies is currently unknown but may further reduce the commercial incentive on lines companies to participate in demand side management.

The other incentive routinely cited for lines companies is the use of load control to delay investment in network upgrades. This assumption is valid for some networks which are constrained, but is not so relevant for networks able to meet full load conditions.

Modern best practice design standards would require that a network not rely on total load control operation as there may be times when equipment is not available. Any new parts of the network would be prudently designed to operate at full load conditions, without allowing for the operation of all load control. Powerco's western network is generally unconstrained and therefore has little commercial incentive to load control. There will be no justification to upgrade existing load control plants or install new plants with the current Threshold Regime and the new Transmission Pricing methodology.

The Issues Paper cites a reduction in electricity intensity between 1990 and 2005 as evidence of a long term demand response (paras 299-300). Given the lack of clear incentives for users other than large industrials to provide a demand-side response Powerco considers this is an assumption that should be used cautiously. The decrease in energy intensity does not seem to intuitively fit with the increasing number of energy intensive luxury goods (eg entertainment centres and spa pools) that are now much more commonly found in homes. The reduction in energy intensity may be a result of a different export/import profile. Powerco believes should be further investigated.

The chapter concludes with the question "To what extent should more detailed examination of demand-side participation be treated as a high priority in the next stage of the Market Design Review?" Powerco believes that in the immediate term there is a high priority piece of work to understand the quantity of load available for demand-side participation and at what range of prices this load would become available. Powerco also notes that there a number of current work

streams which are strongly linked to demand-side participation (In particular the projects looking at smart meters and load management value pricing.). For demand-side participation to become a significant factor in the New Zealand market there needs to be a well co-ordinated approach.

## **Recommendations**

It is recommended that the EC:

- i. Note that the incentives for lines companies to provide a demand-side response are limited (and reducing);
- ii. Provide further detail on the reduction in electricity intensity (shown in Figure 90);
- iii. Develops a clearer understanding of the size of the potential role the demand-side response could play in the electricity market; and
- iv. Amalgamates demand-side response work streams under one project.
- v. As part of the demand-side response work give consideration to the opportunities and challenges associated with smart networks (wide scale adoption of embedded generation at LV, bidirectional load flows on LV networks, demand side automation and price response etc).

## **10 Conclusion**

Powerco's aim in engaging in the Market Design Review process is to provide constructive suggestions and recommendations that support the ongoing improvement of the electricity market. Powerco is not a key player in the wholesale or retail markets, but believes consideration of electricity market performance needs to be considered in the context of the wider electricity sector and the policy and regulatory environment.

The Market Design Review – Issues Paper has collated wide ranging data and provided some useful insights into market performance. Powerco's submission recommends that the EC takes the opportunity provided by the Review to develop a clear picture of what a high performing electricity market would look like. Alongside the development of clear assessment criteria this would provide the sector with the ability to better understand market performance.

The Issues Paper is subject to a general caveat about information and completeness. The EC has a central role in the regulation and oversight of the electricity sector and works closely with a number of other government agencies. Powerco believes there would be significant benefits in the EC initiating an inter-agency project which looked at information gathering for the sector with the aim of developing a common set of indices across the sector to inform decision makers.

Finally Powerco believes there is an immediate need for the sector to better understand and quantify the potential role of demand-side management in the electricity supply chain.

## **11 Recommendations**

### **Problem definition**

It is recommended that:

- i. the Review Process is revised to explicitly include as a first stage:
  - a description of what a high performing electricity market would look like;
  - a set of measurable attributes of a high performing market; and
  - a transparent set of assessment criteria.

### **Scope of review**

It is recommended that:

- i. Given the broad mandate of the EC over the entire industry and the fact that it is accountable for outcomes dependent on the entire supply chain which includes transmission, distribution and the demand side, the Review must be set in a much broader context than currently covered by the current issues paper.
- ii. The inter-linkages between work-streams developed from this Review be clearly identified and overall sector objectives are not lost.

### **Market information**

It is recommended that:

- i. The EC initiate an inter-agency process which looks at information gathering for the sector with the aim of developing a common set of indices across the sector to inform decision makers, investors and others interested in the performance of the market.

### **Wholesale market issues**

It is recommended that:

- i. Consideration is given to ways of making the reserves market easier to participate in. For example could the information requirements be amended?

- ii. Consideration is given to whether the current approach to frequency keeping is maintained.

### **Demand-side participation**

It is recommended that the EC:

- i. Note that the incentives for lines companies to provide a demand-side response are limited (and reducing);
- ii. Provide further detail on the reduction in electricity intensity (shown in Figure 90);
- iii. Develops a clearer understanding of the size of the potential role the demand-side response could play in the electricity market; and
- iv. Amalgamates demand-side response work streams under one project.
- v. As part of the demand-side response work consideration is given to the opportunities and challenges associated with smart networks (wide scale adoption of embedded generation at LV, bidirectional load flows on LV networks, demand side automation and price response etc).

## Appendix A

### Government's assessment criteria for 2006 review of the electricity market framework

Security of Supply	Competitive and Efficient Pricing
<ul style="list-style-type: none"><li>• Efficient management of dry years</li><li>• Certainty of timely investment in generation</li><li>• Certainty of timely investment in transmission and distribution (<i>missing but covered off in the companion paper</i>)</li><li>• Effective demand-side response to tight supply</li></ul>	<ul style="list-style-type: none"><li>• Efficient capital investment in generation</li><li>• Co-ordination of generation and transmission</li><li>• Sustained pressure on operational costs</li><li>• Least cost dispatch</li><li>• Pressure on retail innovation</li><li>• Efficient wholesale prices</li><li>• Availability of contracts for buyers</li></ul>

## Appendix B

The EC's Principal Objectives (section 172N of the Electricity Act 1992) are to:

- *ensure that electricity is produced and delivered to all classes of consumers in an **efficient, fair, reliable and environmentally sustainable** manner; and to*
- *promote and facilitate **the efficient use of electricity**.*

*With specific outcomes that:*

- *energy and other resources are used **efficiently**;*
- ***risks** (including price risks) relating to security of supply are properly and efficiently managed;*
- ***barriers to competition** in electricity are minimised for the long-term benefit of end-users;*
- ***incentives for investment in generation, transmission, lines, energy efficiency and demand-side management** are maintained or enhanced and do not discriminate between public and private investment;*
- *the **full costs** of producing and transporting each additional unit of electricity are **signalled**;*
- *delivered electricity **costs and prices are subject to sustained downward pressure**; and*

*the electricity sector contributes to achieving the Government's **climate change objectives** by minimising unnecessary hydro spill, efficiently managing transmission and distribution losses and constraints, **promoting demand-side management and energy efficiency and removing barriers to investment in new generation technologies, renewables and distributed generation.***

Although they would need refining the highlighted words provide an appropriate scope for outcomes under consideration by the review.