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Response to Issues Paper: The Review of Asset Valuation Methodologies

The Commerce Commission (the "Commission") is undertaking a review of valuation methodologies under Section 57ZD of the Commerce Act (the "Act").

The Commission released an issues paper dated 14 March 2002 that raised some questions to assist those wishing to make initial submissions. This letter sets out Transpower's submission on the questions raised in the issues paper.

1 Purpose and Context of the Review

A.1 What should be the purpose(s) of the review, having regard to the purpose of the Act and the purposes of the other subparts under Part 4A

1.1 The purpose of the review is to determine which asset valuation methodology best enhances the purposes of the Act and of Subparts 1 and 3 of Part 4A of the Act namely, the efficient operation of the electricity distribution and transmission markets for the long term benefit of consumers.

1.2 The rationale for this is set out below.

1.3 The purpose of the Act is focused on the long term benefit of consumers in New Zealand but sees the primary means for this as competition: see Section 1A. However, the Act seeks the long-term benefit of consumers in markets where competition is limited by providing for the control of those goods and services: see Part 4 of the Act.

1.4 Part 4A contains provisions applicable to the electricity industry which are divided into 4 Subparts:

a. Subpart 1 provides for controlled goods or services by means of a threshold and control regime. The express purpose of Subpart 1 is:

"…to promote the efficient operation of markets directly related to electricity distribution and transmission services through targeted control for the long-term benefit of consumers…"

by ensuring that suppliers are limited in their ability to earn excessive profits, face incentives to improve efficiency, provide services at a quality at which consumers demand and share the benefits of efficiency gains with consumers: see Section 57E;

b. Subpart 2 provides for authorisation of Transpower's pricing methodology;

c. Subpart 3 provides for information disclosure. The express purpose of Subpart 3 is:

"…to promote the efficient operation of markets directly related to electricity distribution and transmission services by ensuring that large line owners and large electricity distributors make publicly available reliable and timely information about the operation and behaviour of those businesses, so that a wide range of people are informed about such factors as profits, costs, asset values, price…"

and other matters: see Section 57T; and

d. Subpart 4 provides for asset valuations. The scheme of Subpart 4 is to provide for the recalibration of line owner asset valuations in accordance with the ODV handbook: see Sections 57Z to 57ZC; and to review valuation methodologies for line business system fixed assets: see Sections 57ZD and 57ZE.

1.5 The recalibration provisions (Sections 57Z to 57ZC) have the purpose of ensuring that valuations of the line business system fixed assets of large line owners accurately apply the ODV methodology set out in the ODV handbook, no doubt to give some integrity to current asset valuations which are disclosed under the Electricity (Information Disclosure) Regulations 1999 and which (in practice) drive current prices for electricity distribution and transmission services to consumers: see Section 57X.

1.6 Clearly, the review of valuation methodologies provisions (Section 57ZD and 57ZE) are contained in Part 4A in anticipation that asset valuations will be relevant to the threshold and control regime established under Subpart 1 and, therefore, will be the subject of the Information Disclosure Regime under Subpart 3. Hence, the purpose of the review of valuation methodologies under Section 57ZD is to review and determine the valuation methodology which best enhances the purposes of Subparts 1 and 3, i.e, the valuation methodology

that will best enhance the targeted control of electricity and transmission services under Section 57E and is readily subject to disclosure under the Information Disclosure Regime established under Subpart 3.

1.7 The interrelationship between valuation methodologies and the operation of the threshold and control regime established under Subpart 1 is recognised by the Commission in its *Regulation of Electricity Lines Businesses: Discussion Paper* dated 21 March 2002 (the "Discussion Paper"). For example, paragraph 8.14 identified the possible role of an optimisation based valuation methodology as part of the control regime under Subpart 1 to discipline capital expenditure.

1.8 In so far as Transpower is concerned, there is a clear linkage between the operation of any threshold and control regime established under Subpart 1 and any valuation methodology determined under Subpart 4, so that the most appropriate valuation methodology for the regime established under Subpart 1 must be chosen. For example, the valuation methodology may impact on Transpower customer preferences in respect of the provision of transmission services. Currently, Transpower is subject to an asymmetric cost recovery risk arising from investments in assets regulated under the ODV methodology. This asymmetry of risks potentially creates a perverse incentive for Transpower customers to favour transmission investment over other forms of investment, thereby undermining dynamic efficiency. Conversely, this asymmetry of risk represents a disincentive for Transpower to invest in transmission: see paragraph 45 of Transpower's submission on the Commission's Discussion Paper.

1.9 Consequently, the Commission must ensure that its review of the price control and valuation methodologies are undertaken contemporaneously so as to ensure that the purpose of the review of valuation methodologies under Subpart 4 enhances the regimes established under Subparts 1 and 3 of Part 4A.

A.2 Can one valuation methodology be used for different purposes (e.g. comparative benchmarking and assessments of electricity lines businesses against control thresholds) or are different valuation methodologies best used for different purposes?

1.10 The analysis set out above in response to question A.1 and the emphasis in the purpose statements for Subparts 1 and 3 on efficiency (see Sections 57E and 57T) suggest that one valuation methodology should be used for the purpose of the threshold and control regime established under Subpart 1 i.e., for the purposes of assessment of electricity lines businesses against control thresholds. Unnecessary complexity and cost should be avoided at all costs. However, it is acknowledged that comparative benchmarking between Transpower and transmission companies in other jurisdictions may involve comparison of Transpower's valuation with valuations produced under different valuation methodologies (if benchmarking was to involve value of assets). However, Transpower has already submitted that benchmarking of

this nature is not appropriate; a more practical and lower cost approach would be to establish a process for benchmarking Transpower's current costs against costs in previous years to indicate trends and to identify the cost impact of changes in Transpower's external environment. This approach could be supplemented by the use of more targeted benchmarking exercises (using established international benchmarking exercises where appropriate) to establish meaningful benchmark for specific aspects of Transpower's operations: see Section 8.1 of Transpower's submission on the Commission's Discussion Paper.

1.11 Comparative benchmarking should be considered as an exercise separate from the choice of valuation methodologies. Transpower is willing to work with the Commission in investigating how a cost effective benchmarking regime and threshold can be established: see paragraph 146 of Transpower's submission on the Discussion Paper.

A.3 (a) What assets should be valued (e.g. the entire business, a business unit, a regional business unit)?

1.12 There must be alignment between the price control and valuation regimes. The valuation methodology should therefore cover the entire regulated business. In this regard, the Commission's description of Transpower's transmission business at paragraph 5.24 of the Discussion Paper is appropriate i.e., providing, operating and maintaining electricity works, such as lines, cables, substations and the high voltage direct current inter-island link, to facilitate national conveyance of electricity for generators to substations at which large consumers of electricity and other owners are connected to the works, and selling electricity conveyance services to electricity generators, large consumers and other large line owners. However, investments in assets under a contestable process should be "ring fenced" and excluded as referred to in paragraph 1.16.

A.3 (b) Does the reference to "System fixed assets" in the Act mean that the definition in the Electricity (Information Disclosure) Regulations 1999 should be used for the review?

1.13 Section 57Y of the Commerce Act 1986 provides that in Subpart 4 of Part 4A "system fixed assets" has the same meaning as in the Electricity (Information Disclosure) Regulations. This Subpart of the Act deals with both the asset valuations of line business and the review of asset valuation methodologies. Thus, there is no doubt that the definition in the Regulations must be used for the review.

A.3 (c) Does it mean that only specialised assets (or sunk assets) of electricity lines businesses are covered by the review?

1.14 For valuation purposes, the relevant system fixed assets should be defined with reference to those activities that the Commission is seeking to control, namely, electricity distribution and transmission services.

1.15 The contestability of services should be considered in determining those assets that should be included in an electricity lines businesses system fixed assets. For example, the ODV handbook excludes meters used to measure electricity consumption from electricity distribution company system fixed assets because the provision of such meters is considered to be contestable.

1.16 In the case of Transpower, it must be recognised that in the future there may be some investments in the grid that Transpower makes that do not have the economic characteristics of monopoly service provision. For example:

a. a bilateral agreement for the provision of transmission services – such as the connection of a remote resource processing plant to the national grid requiring creation of a new point of connection – where there are clear substitutes to the procurement of transmission services. In this case, service provision may be open to competitive tender and (for example) subject to competition from local generation offering a directly connected power supply; or

b. provision of transmission assets in an explicitly contestable process, for example, to provide a capacitor bank for the purposes of local voltage support in competition with a generation-based alternative.

In these circumstances, it would seem that such assets should not be included in the system fixed assets but should be "ring fenced" and excluded from the regulatory regime: see paragraphs 231 to 237 of Transpower's submissions on the Discussion Paper.

A.4 How important is it that the valuation methodology used in the electricity industry be consistent with approaches in other industries?

1.17 It is not important that the valuation methodology be consistent with that used in other industries. The valuation methodology should be designed to fulfil the purposes of Subparts 1 and 3 of Part 4A of the Act.

2 Asset Valuation Methodologies

A.5 What valuation methodologies should be considered in the review?

2.1 The 1994 report "Rationale for Financial Performance Measures in the Electricity Information Disclosure Regime" identified six valuation methodologies:

- Depreciated Historical Cost (DHC)
- Depreciated Index Historical Cost (DIHC)
- Depreciated Replacement Cost (DRC)
- Optimised Depreciated Replacement Cost (ODRC)
- Economic Value (EV)
- Optimised Deprival Value (ODV)

2.2 In addition, the ACCC has used Depreciated Optimised Replacement Cost (DORC) for the valuation of electricity distribution and transmission assets, and the Commerce Commission has applied Optimised Depreciated Historical Cost (ODHC) in valuing specialised airfield assets.

2.3 Consequently, all these valuation methodologies should be considered in the review. They are described briefly in the following paragraphs in response to question A.5.

Depreciated Historical Cost

2.4 This methodology values assets at the original cost to the purchaser and depreciates them on the basis of an expected asset life. Accounting book values are generally based on this method.

Depreciated Indexed Historical Cost

2.5 This methodology uses a price index to adjust the initial cost of the asset to current prices. The assets are then depreciated on the basis of an expected asset life. The price index used to adjust the initial costs is generally a consumer price index.

Depreciated Replacement Cost

2.6 This is sometimes referred to as a modern equivalent asset approach. An asset is valued at the current cost of providing the stream of services it produces. During periods of rising prices the replacement cost may exceed the historical cost, but improvements in technology can also lead to cost reductions.

Optimised Depreciated Replacement Cost

2.7 This approach uses depreciated replacement cost but optimises the services provided by the current assets, removing redundancy that has arisen because of inappropriate prior investments or changes in demand.

Economic Value

2.8 The economic value methodology equates the value of assets with the present value of expected future cashflows. These cashflows are limited by the next best alternative available to customers. Where the present value of potential cashflows is lower than the scrap value of the assets the scrap value is used instead.

2.9 Under regulatory price control the potential cashflows from an asset are either directly or indirectly related to the value ascribed to that asset. Clearly there is a circularity problem if the value of an asset is based on cashflows that are based on the asset's value. The alternative is to base calculation of the cashflows more directly on customers' next best alternative.

Optimised Deprival Value

2.10 A deprival valuation sets the value of a set of assets with reference to the loss that a business would suffer if it were deprived of the assets being valued, and subsequently took action to minimise that loss. This is calculated as the minimum of the optimised depreciated replacement cost (ODRC) and economic value (EV).

2.11 In practice there is very little difference between ODV and ODRC valuations. This is evidenced by the fact that economic value write-downs under the current ODV methodology have been relatively rare. Transpower's 2001 ODV valuation was effectively an optimised depreciated replacement cost valuation as in all segments tested the economic value of its assets was found to be higher than the depreciated replacement cost.

Depreciated Optimised Replacement Cost

2.12 This approach is a variation on the ODV methodology. It allows accelerated depreciation on assets that are subject to the threat of optimisation or economic by-pass[1]. This avoids the circularity inherent in the economic value approach.

[1] Note that the ODV handbook sets maximum depreciation rates for various classes of assets, which does not rule out use of accelerated depreciation on specific assets. There is an explicit requirement that assets subject to by-pass receive economic value write-downs. In contrast DORC explicitly allows accelerated depreciation – spreading the impact of by-pass over a number of periods.

Optimised Depreciated Historical Cost

2.13 This approach applies an optimisation test to assets valued at depreciated historical cost. Assets that are not deemed to be "used and useful" are excluded from the asset base in an ODHC valuation.

A.6 What are the underlying economic and accounting rationales for each methodology?

Depreciated Historical Cost

2.14 This method is useful from an accounting perspective because it reflects the degree to which the investors' initial capital outlay has been consumed.

Depreciated Indexed Historical Cost

2.15 The depreciated indexed historical cost methodology ensures that depreciation over the life of the asset is equal, in real terms, to the historical cost of the asset.

Depreciated Replacement Cost

2.16 A weakness of the DIHC approach is that it does not account for the influence of technology on the cost of replacing assets. Use of depreciated replacement cost allows the impact of both inflation and technology to be accounted for more precisely than in the DIHC. Use of current replacement costs also ensure that the costs reflect those that would be faced by a competitor wishing to replicate the system assets. The costs born by consumers therefore reflect today's costs.

Optimised Depreciated Replacement Cost

2.17 The ODRC value is the minimum current cost of meeting current supply needs in an efficient way. In this sense it is the minimum cost at which the assets are commercially sustainable.

Economic Value

2.18 In its purest form the economic value methodology aims at establishing a market value of an asset using discounted cashflows. The upper bound in a market transaction is the value of a customer's next best alternative. For electricity transmission and distribution services this alternative may be represented by an opportunity to by-pass the assets being valued, or to render those assets redundant through investment in generation.

Optimised Deprival Valuation

2.19 The ODV methodology introduces the economic value concept into the ODRC methodology. Assets exposed to competition from by-pass or generation may have an economic value lower than that implied by ODRC.

2.20 As ODV must be less than or equal ODRC it must be equal to or lower than the minimum current cost of meeting current supply needs. In this sense it recognises that some assets are not commercially sustainable in the long term.

Depreciated Optimised Replacement Cost

2.21 Conceptually, this approach is identical to ODV, but achieves its results via a different method. For the purpose of comparing the alternative valuation methodologies DORC will be considered to be covered by the ODV methodology.

Optimised Depreciated Historical Cost

2.22 The historical cost approach "provides investors with a return on the amounts invested and preserves incentives to invest in the future". Assets are then subject to optimisation on the grounds that pricing should "reflect the least cost production or 'efficient production'".

A.7 What are the pros and cons of each valuation methodology? How important are these in the context of the regulation of electricity lines businesses?

2.23 The merits of each valuation method should be considered in the context of the purpose of the review as set out in paragraph 1.1 in response to question A1.

2.24 As explained, the purpose statement for Subpart 1 is particularly important. Hence, the methodologies should be evaluated with respect to:

a. Limiting excess profits- the valuation, in conjunction with the other components of the information disclosure regime, should allow identification of whether firms are earning monopoly profits;

b. Efficiency- the valuation should achieve efficient outcomes. The methodology should provide strong incentives for investors to identify least cost outcomes, while allowing full recovery of the economic costs of efficient investments. In essence, the valuation methodologies should be compared by reference to the incentives they create for investor, customer and regulators and the impact of these incentives on allocative, productive and dynamic efficiency;

c. Consumer demand - the valuation method should reflect the impact of changing consumer demand, and should provide incentives for

investors to efficiently meet consumers requirements for security and quality of supply;

d. Sharing of efficiency gains- asset values should reflect changes in technology and asset management practices; and

e. The purpose statement for Subpart 3 (Section 57T) implies a fifth criteria, consistent definition. The valuation treatment across companies should be consistent to ensure transparency in information disclosures and to facilitate cross company comparisons. In addition, the chosen valuation methodology should provide the most efficient outcome over the widest rage of relevant assets or investments, and valuers should be able to apply the methodology without constant reference to the regulator.

2.25 The following points are also relevant:

a. valuation should be considered separate from pricing;
b. the extent to which a valuation methodology creates risks for investors and customers; and
c. the extent to which a valuation methodology can be applied in practice (e.g. historical cost methodologies may not be practical because cost data will be lost given the age of many distribution and transmission assets), and cost of applying any particular methodology: see for example section 3.2 of Transpower's August 2001 submission on the Commission's draft report Price Control Study of Airfield Activities at Auckland, Wellington and Christchurch International Airports.

Evaluation of Methodologies

Depreciated Historical Cost

2.26 The principle advantage of the DHC methodology is that it has very low compliance costs, as businesses already maintain DHC valuations to support accounting functions.

2.27 The method does not promote efficiency of investment. Current customer requirements are irrelevant – asset values reflect historical views on customer requirements. Assets with excess capacity and assets subject to by-pass threat are valued in the same way as assets that are fully utilised[2]. There is thus no discipline on new investments. Finally, because asset values are based on actual costs there is little or no consistency between company valuations.

Depreciated Indexed Historical Cost

2.28 DIHC has the same weaknesses as DHC. However, the use of price indices to express historical costs in current terms provides some additional consistency.

[2] Though assets that are completely redundant, or subject to permanent impairment may be given a lower value.

Depreciated Replacement Cost

2.29 The use of standardised replacement costs provides for a high degree of consistency in company valuations, but comes at the cost of establishing specifications and costs for modern equivalent assets.

2.30 Current customer requirements are not taken into account in this approach, as it values all assets regardless of whether they are needed to meet current or future customer requirements.

2.31 Efficiency is improved as the replacement costs provide a benchmark for businesses expenditure on new assets. Provided the specifications of the modern equivalent assets and the associated replacement costs are updated regularly this methodology can also facilitate the sharing of efficiency gains by reflecting the lower costs associated with new technology.

Optimised Depreciated Replacement Cost

2.32 Optimisation increases the degree of complexity and, therefore, the compliance costs. It also reduces the degree of consistency provided by the use of replacement costs.

2.33 ODRC can improve allocative efficiency because the assets are valued in relation to the services required by consumers. However, dynamic efficiency is adversely affected because once an initial investment is made, an asset owner is exposed to two risks:

- the risk of re-valuation from a decline in the value of the assets to the market: and

- the risk of re-optimisation as less expensive ways are found to duplicate the services provided by the asset, for example through changes in the capability of modern equivalent assets, or changes in industry standards

2.34 Both of these risks result in a loss of value to the investor, with no potential up side, as the optimised valuation is set as the lesser of cost and market. Where revenue is controlled at a level consistent with the cost of capital this "asymmetry" of risk reduces future income making it impossible for investors to recover their cost of capital on the investments. Investors will manage this risk by reducing their level of investment. The result is delays in the introduction of innovative new technology and a lack of efficient new investment.

2.35 As already noted at paragraph 1.8 the asymmetric risk created by the inclusion of an "optimisation-test" shows that valuation and other price control issues must be considered together, so that the design of the regulatory framework achieves an efficient level of new investment.

Economic Value

2.36 The economic value method promotes efficient outcomes to a degree by preventing an asset from being over valued relative to other alternatives. As an unregulated monopoly would set prices at or below the value of alternative sources of supply this approach does not reveal monopoly behaviour. "Assets are valued at their net cashflow regardless of whether or not this involves monopoly behaviour".

Optimised Deprival Valuation (and Depreciated Optimised Replacement Cost)

2.37 ODV represents the minimum replacement cost for electricity assets. This is the maximum value a business could have under non-monopoly conditions because a higher value would lead other businesses to replicate the services being provided. The ability of a firm to extract excess profits is thus extremely limited.

2.38 Performance on efficiency is mixed. The valuation of assets at the lesser of ODRC and EV prevents assets being over valued relative to other alternatives, so there are strong disciplines on new investment expenditure. However the inclusion of an optimisation test exposes investors to asymmetric risk.

Optimised Depreciated Historical Cost

2.39 ODHC is provides strong incentives for investors to identify least cost outcomes. This overcomes the major weakness of the depreciated historical cost approach. In doing so, the methodology exposes investors to the asymmetric risks inherent in optimisation.

2.40 In addition, it is difficult to establish an objective basis for optimisation. Those replacement cost methodologies that employ optimisation (ODRC, ODV and DORC) minimise cost subject to a set of task based constraints (such as forecast demand levels). This is possible because of the existence of standard building blocks that provide a consistent basis for comparing the costs of alternative configurations. As historical cost varies for each asset, the ability to compare alternatives objectively is lost except in the most trivial case i.e., where an asset is completely redundant.

2.41 To the extent that inflation affects the replacement cost of an asset, historical cost will be lower than replacement cost. The ODHC of an asset is, therefore, likely to be lower than its ODRC or ODV. Therefore, it is lower than a commercially sustainable value.

Summary of Discussion

2.42 The crucial issue in selecting a valuation methodology is efficiency – namely whether the methodology provides incentives to identify least cost options for new investment, and whether, on average, investors can recover the full economic cost of efficient investments.

2.43 Section 57E explicitly identifies efficiency as a critical consideration in relation to the electricity line regulation provisions. Of the three dimensions of efficiency – allocative, productive and dynamic – dynamic efficiency improvements tend to outweigh the combined impact of allocative and productive inefficiencies[3].

2.44 Unless the combined price control and valuation regime provides for dynamic efficiency, distribution and transmission line owners will be unable to ensure that quality and security of supply can be sustained at levels that meet consumers' long term needs.

2.45 None of the valuation methodologies can deliver dynamic efficiency in isolation. Historical cost methodologies (with the exception of ODHC) and the DRC methodology allow investors a return on inefficient investments, while the asymmetric risks created by optimisation removes incentives for efficient investment in the other methodologies.

2.46 Transpower's position is that the impact of asymmetry can be addressed by allowing investors a rate of return equal to WACC plus a margin. Over the long-term, optimisations and other asset write-downs will ensure that the overall return approximates WACC. This emphasises the importance of considering valuation methodology in the context of broader price control mechanisms

A.8 (a) What are the information requirements of each valuation methodology?

2.47 All valuation methodologies require an asset register containing as a minimum each asset, its type and location. In addition, with the exception of the Economic Value method, the register must include, for the purposes of calculating depreciation, the commissioning date for the assets, an estimate of the expected economic life of the asset, and its expected remaining life.

Depreciated Historical Cost

2.48 In addition to the generic information, the asset register must include the initial capital cost of the assets, and details of any subsequent capital expenditure carried out on the assets.

[3] See Section 6 of Transpower's submission on the Discussion Paper.

Depreciated Indexed Historical Cost

2.49 The DIHC methodology requires estimation of an appropriate price index for converting historical into current costs. Other information requirements are as for the DHC methodology.

Depreciated Replacement Cost

2.50 Modern equivalent replacement costs must be calculated for all assets. This requires establishment of:

- standards and policies identifying best practice operations;
- detailed asset specifications for modern equivalent "building blocks"; and
- competitive costs, and estimates of the impact of location specific factors on cost (such as the seismic and terrain factors identified in the ODV Handbook). These are used to create hierarchical relationships between modern equivalent building blocks and the sets of assets they represent, and to assign an appropriate replacement cost to the building blocks used at a given location.

Optimised Depreciated Replacement Cost

2.51 Differences in information needs of the DRC and ODRC methodologies are driven by the specifics of the optimisation techniques to be applied. For example, an optimisation process that places few limitations on principles used to construct optimised configurations will have very high information requirements. There will be a large number of potentially optimal solutions that must be examined, while the information requirements of a more proscribed optimisation will be lower.

2.52 Other key information requirements of ODRC are:

- forecasts of load and energy flows;
- security and quality of supply criteria;
- policies for constructing optimised configurations (to ensure that the resulting optimisations are electrically feasible); and
- information on contractual and other obligations that constrain the optimised configuration.

2.53 Finally, differences between the optimised and actual networks, and the complexity of the optimisation process mean that a greater volume of

documentation must be kept to ensure relationships between optimised and physical assets are clearly understood.

Economic Value

2.54 A pure economic value approach requires calculation of discounted cash flows for the assets being valued. As noted above this is not feasible where revenues are related to asset values. The alternative is to estimate the economic value by reference to customers' opportunity costs. This requires development of models to examine:

- the cost and potential for uptake of distributed generation technology;
- the validity and cost/benefits of alternative transmission/distribution solutions; and
- the impact of contracts constraining revenue streams for specific sets of assets.

Optimised Deprival Value

2.55 The information requirements for the ODV methodology, are those of the ODRC and EV methodologies combined. Therefore, the ODV methodology has the greatest information requirements of all of the valuation methodologies referred to.

Depreciated Optimised Replacement Cost

2.56 The DOHC methodology has similar information requirements to ODRC, but require information on economic alternatives in order to identify those assets that may be subject to by-pass risk. It has the added complexity of operating the accelerated depreciation regime on these assets.

Optimised Depreciated Historical Cost

2.57 The information requirements of this methodology depend on the nature of the optimisation techniques being applied.

2.58 In addition to the requirements of the DHC methodology, ODHC requires:

- forecasts of load and energy flows;
- security and quality of supply criteria;
- policies for constructing optimised configurations (to ensure that the resulting optimisations are electrically feasible); and
- information on contractual and other obligations that constrain the optimised configuration.

2.59 The approach may also require a set of standard costings to be maintained (the equivalent of modern equivalent asset replacement costs) to serve as a basis for objective comparison of candidate optimised configurations. In such a situation, the information requirements of ODHC would be higher than those of ODRC, because ODHC would require maintaining both historical and replacement cost schedules.

A.8 (b) How accurate and robust is the information likely to be?

2.60 Because of the long lives of electricity transmission and distribution assets historical information required for all of methods is likely to be incomplete. For example, commissioning dates may be available from archive, or can be estimated via engineering assessment; but information on subsequent operations on the assets may not be. Records of the expenditure may be lost, or the expenditure may never have been recorded against the assets being valued. In this regard, see paragraphs 10, 10.1 and 10.2 of Transpower's 1 March 2002 letter to the Commission setting out Transpower's response to the Commission's audit of Transpower's valuation report.

2.61 Issues of data accuracy and rigour are complicated by the fact that historically lines companies have applied differing accounting treatment to lines expenditure. Activities treated as operating costs in one company may have been capitalised in another.

2.62 Forward looking valuation methodologies, such as those that incorporate optimisation or economic value processes, have further issues with accuracy. Some of the input data to these processes, such as long run demand forecasts, is subjective. In addition the processes themselves involve the exercise of judgement. For these processes the test should not be the accuracy of the information but the robustness of the process, and the reasonableness of the assumptions being employed.

2.63 Finally, a valuation methodology estimates the value of a system. The accuracy of input data should be considered in light of its impact on the overall value of the system assets.

A.9 How might different valuation methodologies (in conjunction with the regulatory controls) affect the incentives and ability to invest of electricity lines businesses?

2.64 The incentives under each methodology are discussed in section 7 as part of the merits of each methodology.

A.10 (a) Can valuation methodologies impact on the pricing of electricity lines business services?

2.65 The valuation of a business is fundamental to the determination of a fair and reasonable rate of return for that business. The method used to establish a

value for a business is thus directly relevant to the way in which an allowable level of revenue is set.

2.66 If pricing is viewed as the allocation of a revenue requirement then the method for allocating prices should be consistent with the valuation methodology. However where prices are not set by reference to a revenue requirement but by some other mechanism (such as a price path formula) the valuation methodology is less relevant.

2.67 Consequently, the choice of valuation methodology should turn on what best enhances the threshold and control regime under Subpart 1 of the Act.

A.10 (b) If so, what relevance does this have for the choice of valuation methodology?

2.68 The choice of valuation methodology should be separate from any pricing consideration; the choice should be driven by what best enhances the threshold and control regime established under Subpart 1 of Part 4. If a line owner decides to use the asset values determined by the valuation methodology, it will do so by reference to the potential impact on the business' ability to operate within the thresholds. However, by general comment, to impact on pricing, the values generated must be economically meaningful.

2.69 In the case of electricity assets, the extent to which an asset is depreciated does not generally affect the level of service the asset provides. Therefore, it is not economically meaningful to base prices (as opposed to revenues) on depreciated values.

2.70 Historical cost is an economically meaningful basis for pricing in an environment either immediately after the investment has occurred, or where there is no inflation or technical progress.

2.71 Optimised replacement cost is a more appropriate economic measure because it reflects the capital cost of replicating the services provided.

A.11 How important are the types of assets, such as specialised (or sunk assets) and non-specialised assets to the choice of valuation method?

2.72 The nature of the assets being valued has a direct bearing on the type of valuation methodology that can be applied.

2.73 Specialised assets are defined as "Specialised, special purpose, or specially designed property…which…has utility restricted to particular uses/users, and is rarely, if ever, sold on the open market, except as part of a sale of the business in occupation"[4].

[4] NZ Institute of Valuers (NZIV) Valuation Standards 2.

2.74 Specialised or sunk assets are unlikely to have a market value, or a value in an alternative use, while the economic value of these assets may reflect technical and other barriers to entry. The options for establishing a fair value for specialised assets are likely to be based upon either the initial cost of providing the assets, or upon the cost or reproducing the services provided using modern equipment. Consequently, historical and replacement cost valuation methodologies are most relevant to valuation of system fixed assets.

A.12 On what basis would optimisation of electricity line businesses assets be an appropriate feature of asset valuation? How should optimisation be interpreted (e.g. modern equivalent assets, removing redundant assets, removing assets that are not used and useful)? With which asset valuation methodologies can optimisation be used and why?

2.75 Optimisation is an integral part of a valuation methodology, rather than a secondary consideration. It has a direct bearing on the ability of the valuation methodology to achieve the objectives of the valuation exercise.

2.76 Optimisation is used in valuation to identify the extent to which assets are redundant or over-specified.

2.77 The ODV Handbook defines optimisation as a three stage process involving:

- removal of assets which are completely redundant;
- reconfiguration of the network to provide the required services efficiently; and
- removal of surplus capacity on an asset by asset basis.

2.78 Prudent operation of the grid requires a certain level of redundancy to ensure long-term security of supply, and these levels of security are disclosed as part of the valuation report.

2.79 Modern equivalence is incorporated in the process of identifying replacement costs and is not part of the optimisation process.

2.80 The concept of "used and useful" assets is not a valid optimisation concept as it relates to only a single period and ignores future customer requirements. It also ignores the commercial reality that large infrastructure projects have long lead times. The ODV handbook currently allows Transpower to use a 10-year planning horizon for determining the capacity requirements of their networks.

2.81 One issue not dealt with clearly in the optimisation provisions of the ODV handbook is the status of investments undertaken as a result of contractual negotiations. This is discussed further in paragraph 2.95 below.

A.13 How successful has the ODV methodology been at facilitating comparative benchmarking of electricity lines businesses?

2.82 In considering how successful the ODV methodology has been in facilitating comparative benchmarking, the diversity of the businesses making information disclosures must be taken into account. The size, location, operating environment and geographies, customer bases and ownership structures of New Zealand lines businesses will mean that comparative benchmarking will always be difficult.

2.83 Reports summarising industry disclosures produced by Cap Gemini Ernst and Young, and more recently PricewaterhouseCoopers, demonstrate that ODV and the information disclosure regime have provided a basis for comparison of lines company performance.

2.84 However, the methodology has not been as successful as it might have been, because:

- the handbook has been revised several times, over a relatively short period of time;
- early editions of the handbook provided for a broader range of interpretations than the current handbook, leading to differences in treatment across companies;
- valuations and other disclosures were not audited until the Commerce Commission became involved. Without audits there were questions as to how accurately the methodology was being applied;
- mergers and acquisitions have made year on year comparisons difficult; and
- the preparation of omnibus data by third parties has meant that only limited allowance could be made for changes in ownership or accounting treatments.

2.85 The ability to undertake comparative studies is to a degree dictated by the stability of the methodology used to generate the base data. Revising the ODV methodology, or adopting a new methodology is likely to further delay comparative benchmarking.

A.14 (a) What is the relevance of the ODV handbook to the review?

2.86 The handbook is relevant to the review in that it outlines the ODV methodology as currently applied in the electricity industry in New Zealand. In undertaking the review, the Commission should first consider whether the ODV methodology as evidenced by the handbook best suits the purposes of

Subparts 1 and 3 of Part 4A and if not, whether changes to the handbook can deliver on that objective. If not, the Commission should then consider alternative methodologies.

A.14 (b) Does the current application of the ODV handbook encourage sound application of the principles of ODV?

2.87 The current application of the ODV handbook encourages the sound application of principles of ODV, but only when the handbook is interpreted consistently with the purpose statement contained in the handbook. There are, however, some areas within the handbook that are not entirely consistent with ODV principles. These are referred to below.

A.14 (c) If not, how could the ODV Handbook be improved?

2.88 There are a number of areas where the handbook could be improved.

Modern Equivalent Replacement costs

2.89 The concept of modern equivalent asset (MEA) replacement cost is fundamental to ODV methodology. However, the current approach to specifying and costing modern equivalent assets can hinder new investment.

2.90 Inherent in the MEA approach is the assumption of green-field replacement of existing assets. However most investment is not of a green-field nature; it requires additional expenditure to remove or redesign existing works, and additional management cost arising from the increase in complexity. As a result, the change in ODV that arises from an asset upgrade project may be significantly less than the project cost, even though the investment is efficient and is being done at least cost. An investor would have no financial incentive to make such an investment.

2.91 A similar issue can arise where replacement costs are out of date. The handbook contains only limited scope for on-going revision of the costs for published building blocks. It allows the valuer to use lower costs than those provided in the handbook, but contains no references to processes for collective revision of building block costs[5]. As a result, updates of costs can only be made via a process that involves complete revision of the handbook. Transmission building blocks described in the handbook are based on operating methods, asset specifications and costs derived in 1998. Variation in the nature of assets (e.g. the introduction of markerballs for transmission lines), market prices and exchange rates can create significant differences between project costs and the 1998 building block costs.

2.92 The current process for identifying and specifying MEA's may create a barrier to investment in assets that have lower environmental impacts. Clause 3.12 of

[5] Provisions for revision of building block costs were provided in the 3rd edition of the ODV Handbook, but were removed without consultation during the development of the 4th edition.

the handbook lists those factors that may be taken into account in specifying or creating an MEA. This does not include consideration of environmental impacts, except to the extent that these may affect life-time costs (point f) or statutory safety requirements (point e). Some sites require use of specialised assets that have a reduced impact on the environment – such as low noise transformers close to urban areas. The handbook should allow for the use of low environmental impact assets by providing scope for the use of building blocks such as low noise or low loss transformers, or additional oil containment at environmentally sensitive sites.

2.93 Finally, accounting standards (particularly, the adoption of Financial Reporting Standard 3), are changing the level at which companies must track asset data in their accounting systems. ODV building blocks, particularly transmission lines, are collections of large numbers of accounting assets. Therefore, the building block definitions for ODV should be in line with accounting definitions. This would simplify the process of aligning accounting and ODV asset registers and facilitate calculation of refurbishment adjustments.

2.94 In summary , the handbook should be improved by:

- allowing some mechanism for recovery of efficient costs over and above the building block replacement costs;
- ensuring the building blocks encompass all assets used in undertaking the regulated activities;
- providing for the revision of asset values over time to ensure that investment decisions based on ODV valuations are not distorted;
- providing for the development of building blocks with low environmental impacts; and
- aligning the level of detail in ODV asset registers with accounting standards.

Service Potential

2.95 The value of an asset under ODV is defined with respect to the expenditures that would need to occur in order to reproduce the services provided by that asset. An assets value is thus related to its condition and future service potential, rather than its age, or historical expenditures.

2.96 Accounting concepts of cost recovery have been introduced to the fourth edition of the handbook. More specifically, clause 3.27 of the handbook places a nil value on assets which have reached the end of their total life, but which remain in operation. However, an asset that is operational, and is not subject to optimisation must have a positive economic value to both the asset owner and the customer.

Role of Contracts

2.97 The role of contracts needs to be addressed by the handbook. The handbook must clarify the role of contracts in the optimisation process (both bi-lateral and multi lateral industry contracts, such as the EGB Rules, in particular Part F). In relation to Part F, see paragraphs 18 to 30 of Transpower's submission on the Discussion Paper.

2.98 The handbook is unclear about the role and status of contracts. For example, clause 3.33 (a) makes reference to "non-standard contracts for security of supply" in identifying constraints on optimisation but is does not define the criteria that must be met for a contract to be defined as "non-standard". In previous editions of the handbook the impact of contracts on asset values and optimisation has been stated more clearly. Transpower recommends that the role of contracts in the optimisation process be clarified.

A.14 (d) Should a similar handbook be developed if another methodology is preferred?

2.99 Yes. Furthermore, a handbook will be necessary if the Commission wishes to use values for comparative benchmarking, or wishes to audit valuations.

A.15 (a) What would be the transition costs of changing from ODV to a refinement of the ODV methodology?

2.100 This would depend on the nature of the changes in the methodology. However, generally speaking, the transition costs would be low.

2.101 There would be transition costs associated with:

- identification of specific rule changes;
- development of new processes if required (such as the refurbishment process introduced in the 4th edition of the handbook);
- development of collection, processing and reporting systems for any new data required; and
- additional auditing and review costs associated with a change in methodology.

A.15(b) What would be the transition costs of changing from ODV to an alternative methodology?

2.102 Transpower has used the ODV methodology to value its assets since 1991 and the method is now integral to many of Transpower's processes. Transpower has made a significant investment in specifications and guidelines, process manuals, asset management and accounting systems. The transition costs for moving to a new valuation methodology would be substantial, both in terms of financial cost and disruption to Transpower's business.

2.103 The most significant transition costs would relate to:

- the development of a new valuation asset register with electronic processes supporting the new methodology; and
- the development of new technical processes and documentation. This extends beyond valuation into areas such as revenue generation, pricing, budgeting, investment and maintenance programmes.

2.104 Under Section 19 of the Electricity Amendment Act 2001, Transpower's charges based on Transpower's current pricing methodology, are recoverable from connected customers as a debt due. This continues until the earlier of 26 July 2003 or the date upon which Transpower's pricing methodology is first authorised by the EGB or by the Commission under Subpart 2 of Part 4A of the Act. Transpower's current pricing methodology is expressly based on (amongst other things) asset values determined by the ODV methodology. Hence, if Transpower had to sue another methodology for the purposes of Subparts 1 and/or 3 of Part 4 of the Act, it would have to continue use of the ODV methodology for pricing purposes (at least for the period contemplated by Section 19 of the Electricity Amendment Act 2001.

A.16 What lessons from overseas (in the electricity industry and other industries) should be considered in the choice of valuation methodology?

In the interests of timeliness Transpower has not addressed the issue of valuation methodology in other jurisdictions in this submission.

3 Other Considerations

A.17 Do the prices at which electricity assets have traded in the market (e.g. in takeovers or acquisitions) have any relevance for the choice of valuation methodology?

3.1 This question touches on two issues:

- whether there is a role for comparative valuation methodology in establishing a lines company valuation, and
- whether there should be a relationship between observed market prices and those produced by the selected valuation methodology.

Comparative Values

3.2 Comparative valuations attempt to set the value of a business by comparing it to observed market transactions. One of the difficulties with comparative valuations is that to be successful there must be a number of comparable transactions upon which to base an estimate, with detailed information needed to adjust for the specifics of each transaction.

3.3 Given the number of electricity line businesses, and the number of acquisitions over the past four to five years, comparative valuation would not meet the requirements for rigour or accuracy necessary within a price control framework.

Market Prices

3.4 The price of assets in a market transaction can be affected by factors entirely divorced from the assets being sold. The most obvious example of this is where the purchasing firm is able to reduce fixed costs per unit by achieving scale economies. To the degree that any purchaser could make the savings their present value will be included in the market price of the business.

A.18 Should the size of an electricity lines business affect the choice of valuation methodology?

3.5 To the extent that the cost base of an electricity company is related to its size it might be argued that imposition of a complex valuation methodology imposes an onerous cost on small electricity lines businesses.

3.6 However, in order to make good investment decisions all electricity line businesses need good asset value information. The incremental costs of one methodology versus another (excluding transition costs) are likely to be relatively small.

3.7 The suggestion that businesses of differing sizes might be valued in different ways highlights the principle that differences in valuation treatment should be based on an understanding of differential operations and differential impacts.

3.8 For example, while Transpower is defined in the Act as a large electricity line business, the nature of its assets and operations differ significantly from that of other lines businesses. Transmission assets generally operate at higher voltages than distribution assets, and the security implications associated with the operation of transmission network assets are more demanding. For this reason, the current handbook makes a number of important distinctions between Transpower and other electricity lines businesses.

A.19 Should the ownership structure of an electricity lines business (e.g. public company, private company, or trust) affect the choice of valuation methodology.

3.9 A choice of valuation methodology by reference to the ownership structure of businesses is potentially distortionary. Industry structure would be affected by any differences in valuation outcomes that might arise under alternate methodologies. For example, suppose Trusts were under a valuation regime that was less stringent than for public companies. In this situation, Trusts would have an incentive to acquire public companies to obtain windfall valuation gains due to the change in methodology.

3.10 Dynamic efficiency would be affected because the return on investment for an asset would be affected by the constitutional arrangements investors entered into in order to purchase the assets.

3.11 Allocative efficiency would also be affected because participants in the market place would not be on a "level playing field" with respect to their revenue and price setting capabilities. One argument for treating companies differently is that not all organisations have a profit incentive as their principle objective. For example, Transpower's Statement of Corporate Intent requires Transpower to continuously improve the efficiency of its transmission service, and within that objective to earn a commercially appropriate rate of return given the risk of the business. There are two problems with this argument.

a. first, the non-financial objectives of trusts are not relevant to the purpose of the review, or the wider objectives of the price control regime. Businesses should be free to pursue any non-financial objectives in their constitutions within a framework designed to ensure wider industry efficiency; and

b. secondly, without a single valuation methodology it would be impossible to determine how effectively companies were delivering on their non-financial objectives, or to tell what financial tradeoffs were being made to deliver on those objectives.

3.12 A single methodology for all companies provides a level of transparency that will aid industry efficiency, and is consistent with the purposes of Subparts 1 and 3 of Part 4A of the Act (Sections 57E and 57T).

A.20 Should valuation methodologies differ for assets that are the subject of explicit service contracts and assets that are not?

3.13 This issue is closely related to issues of customer preference and service quality raised in the Regulation of Electricity Lines Businesses Discussion Paper. Transpower's submission on the RELB Discussion Paper provides Transpower's view on how the Commission should treat explicit service contracts.

3.14 However, there are some methodology specific issues that should be made in this submission:

a. the historical cost approach deals with explicit service contracts by default because assets are valued at their original construction cost; and

b. the ODV methodology also makes some allowance for explicit service contracts, but these allowances are quite specific:

- Clause 3.33 (a) of the handbook allows non-standard contracts for enhanced quality of supply to be taken into account in optimising the system configuration; and

- Clause 3.43 also makes reference to contractual relationships in establishing quality of supply criteria for optimisation.

3.15 A key difference between investments that are made under explicit service contracts and investments that are not, is that in the former case the asset owner and customer have agreed on the nature of the investment and the associated charges, while in the latter case the asset owner is freely exercising their own judgement in making the investment. Explicit service contracts imply a degree of discipline both in the level of the investment and the scale of the return.

3.16 Transpower's position is that assets covered by explicit service contracts should not be subject to optimisation.

A.21 *Should valuation methodologies differ for assets that are currently in service and those that are not yet in service?*

3.17 From an efficiency standpoint this is a matter of consistency of treatment.

3.18 If works not yet in service are excluded from the valuation, then the cost of interest during construction must be factored into the value of the assets when

they come into service to ensure that investors are able to recover the full economic costs of their investments.

3.19 If works not yet in service are included in the valuation, then no allowance for interest during construction need be made.

3.20 In discounted cash flow terms these two approaches should generate the same net present value. However excluding works not yet in service is a more robust approach as there may be uncertainty regarding if or when the assets will come into service.

3.21 For transmission investments of treatment work in progress is particularly important because of the long lead times required and the large scale of the investments. Ensuring investment is undertaken efficiently may mean that the timing of an invest may differ from a pure "green field" approach. For example upgrading of transmission lines is likely to be lower cost, and more environmentally sustainable than construction of new transmission capacity. However this requires the alignment of the investment with the maintenance requirements of the assets being upgraded. Investment signals will be distorted if the economic costs of the investment cannot be recovered either through the inclusion of works not yet in service in the valuation base, or through capitalisation of interest.

A.22 How should valuation methodologies treat assets that may be used (in part) for purposes other than conveying electricity (e.g. telecommunications) or in non-controlled electricity activities?

3.22 Telecommunications and non-system fixed assets are similar in that these assets are relatively insignificant (i.e. they have a low value relative to the value of transmission assets) and have relatively short economic lives.

3.23 Because their economic lives are short the historical cost of these assets is more representative of their current replacement cost than is the case for transmission assets. Transpower recommends that these assets be valued using depreciated historical cost.

3.24 As telecommunications assets are required for the operation of the transmission network these assets are included in system fixed assets. However as surplus capacity can generate income from activities unrelated to electricity transmission provision should be made for excluding specific assets from the regulated asset base.

A.23 Should asset valuations be audited? If so, how should this be done? And by whom?

3.25 Clearly valuation and other financial disclosures should be audited to ensure their accuracy and compliance with the regulations under which they are prepared. Such audits are carried out by each electricity distribution

company's statutory auditor. The issue is whether there is a requirement for subsequent audit by the Commission.

3.26 The ODV recalibration conducted by the Commerce Commission under Subpart 4 provides a good example of how accuracy can be maintained in the absence of regulatory audits. A downward movement in electricity lines business system fixed asset valuations of $45 million out of a combined lines business ODV value (including Transpower) of almost $6.5 billion suggests that, with a few exceptions, external audit by qualified professionals has resulted in accurate valuations (within an acceptable range of tolerance).

3.27 Disclosures of electricity line business valuations should be externally audited by those with suitable business and technical qualifications. Transpower's experience is that these qualifications are not generally found in a single reviewer – instead a team needs to formed comprising both accounting/valuation expertise and industry technical knowledge. For example, Transpower's asset valuation pursuant to the ODV methodology is externally reviewed by PricewaterhouseCoopers with Meritec as technical reviewers.

3.28 The Commission should develop a set of standards for valuation reviews and approve qualified organisations to conduct reviews according to those standards. This would reduce the duplication of effort inherent in having valuation disclosures externally audited and subsequently subject to a regulatory audit. The Commission should appoint a panel comprised of approved reviewers, Commission and industry representatives that would have the function of overseeing the standards, ensuring consistent interpretation of the valuation handbook, and making recommendations on refinements to the valuation methodology.

Concluding Comments

If you have any queries, or wish to discuss these matters further please contact Glen Thomson (phone 495 7132).

Yours Sincerely,

Peter Robertson
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Transpower NZ Limited