Transmission Pricing Advisory Group

Efficiency considerations

Consideration of concern that they are ad hoc, and not grounded in public policy

8 August 2011

Note: This paper has been prepared for review by TPAG. Content should not be interpreted as representing the views or policy of the Electricity Authority or of TPAG

1 Consideration of whether the efficiency considerations are ad hoc and not grounded in good public policy

1.1.1 The efficiency considerations applied in the discussion paper are not ad hoc and are easily referenced to public policy criteria for setting and evaluating transmission pricing options in use in other jurisdictions and proposed in mainstream economic literature. The evolving criteria, on which the final efficiency considerations were based on, referenced some dimension of economic efficiency as they were progressively developed through the transmission pricing review.

1.1.2 The starting point for the final set of efficiency considerations used by TPAG commenced with a report by Frontier Economics Limited (Frontier)[1]. The report provided the theoretical basis for the pricing of natural monopoly services, as applied to electricity transmission, including the recovery of sunk costs and the efficient signalling of new investment. The report noted that at the time –

> … that other (non-efficiency-related) objectives of the transmission pricing regime, such as equity are not considered except in so far as they influence the achievement of economic efficiency.

1.1.3 The Frontier report further noted that if the transmission system is able to be augmented perfectly efficiently, and there are no economies of scale in generation, load or transmission, full nodal pricing should also provide appropriate signals for investment by generators and loads. That is, where these two conditions are present, nodal pricing should provide investors with incentives to choose the optimum technology, location and timing of new generation plant and load facilities. Transmission pricing reduces to an exercise in least-distortionary sunk cost recovery.

1.1.4 The Frontier report acknowledged, however, that there are factors that may inefficiently (in a strict economic sense) suppress nodal prices. These are:

- economies of scale in investment;
- 'over-caution' of network planners and regulators and the use of deterministic reliability investment criteria which may lead to early investment or over-investment in transmission due to considerations of economic risk of late commissioning; and
- inaccurate pricing of supply security.

1.1.5 Therefore the focus was on evaluating transmission pricing options that addressed this potential problem with nodal pricing as formulated in New Zealand. The criteria put forward by Frontier were aimed at assessing the costs and benefits of providing an enhanced locational signal. Later, in TPAG's development of the analytical framework, those criteria were added to and reworked based on the analysis that had been undertaken since Frontier had proposed the criteria in stage 1.

1.1.6 This analysis suggested that there was negligible benefit to an enhanced locational signal for economically- investments but there may be a benefit of such a signal with respect to reliability

[1] Theory of efficient pricing of electricity transmission services - A Report Prepared for the New Zealand Electricity Commission - July 2009

investments. The analysis had demonstrated that there was no benefit to an enhanced locational signal for economic investments.

1.1.7 The table below sets out Green and Brunkekreeft's[2] principles, the criteria suggested by Frontier in the stage 1, those finally arrived at for the TPAG's analysis and pricing principles derived from a "*long-term regulatory contract*" model for transmission services suggested by Biggar[3]. While there are some differences between the criteria, it is more a matter of semantics rather than substance. Some of the criteria and principles overlap e.g. Frontier's criterion 'good regulatory practice' encompassed transparency as well as simplicity. Also some of some of the criteria are not required for evaluating transmission pricing in New Zealand. For instance full cost recovery for Transpower is an implicit assumption as the TPM is an allocation methodology designed to recover Transpower's full economic costs. Likewise, the relationship between price and quality are addressed outside of the TPM by the Benchmark Agreement/Interconnection Rules and the Commerce Act.

1.1.8 The criteria at each stage also reflect the evolutionary nature of the transmission pricing review, where analysis was used to discount the importance of particular criterion or after further consideration, the criterion was seen as having less importance than it may have had in another jurisdiction. For instance, stage 1 analysis concluded that nodal prices ensured efficient operation of the wholesale electricity market and therefore transmission pricing's role should not interfere with these existing signals. However, in those jurisdictions without nodal pricing, transmission pricing has a legitimate role in promoting efficient dispatch.

Table 1 Comparison of TPAG efficiency considerations with other criteria

Green/Brunkekreeft	Frontier Stage 1	TPAG	Biggar
Promote the efficient day-to-day operation of the bulk power market/ Encourage the efficient short-run use of the network (dispatch order and congestion management)	Frontier noted that nodal prices were sufficient to ensure efficient dispatch. Transmission pricing should not interfere with these signals. It should be consistent with locational hedging options	**Unintended efficiency impacts** -which includes minimising any incentives arising from the TPM that could distort economic dispatch.	Efficient short-run signals
Signal locational advantages for investment in generation and demand/ Encourage efficient signals to guide investment decisions by generation and load (where and at what scale to locate and with what choice of technology –	Theoretical precision/ Network topology	**Location price signalling/ Competitive neutrality –** Coordination of investment and use of transmission, generation and demand-side management/level playing field in retail	Location signals

2 Theory of efficient pricing of electricity transmission services - A Report Prepared for the New Zealand Electricity Commission - July 2009.

3 Independent Review of "Transmission Advisory Group: Transmission Pricing Discussion Paper: 7 June 2011" Darryl Biggar Final Report 14 July 2011.

Green/Brunkekreeft	Frontier Stage 1	TPAG	Biggar
base load, peaking, etc)		and wholesale markets	
Signal the need for investment in the transmission system/ Encourage efficient investment in expanding the network	Divergence from optimal transmission investment/Improve Governance arrangements	**Location price signalling/ Beneficiary pays-** Coordination of investment and use of transmission, generation and demand-side management/provide quality information to the planning and investment approval processes	Location signals
Be simple and transparent	Information requirements/implementation difficulty/ Good regulatory practice	**Good regulatory practice / /Implementation and operating costs –** consistency (e.g. between assets or market arrangements) and taking into account transactions costs promote simplicity and transparency	Simplicity
Be politically implementable/ Encourage fairness and political feasibility	Good regulatory practice/Stakeholder acceptability	**Good regulatory practice** – underlying requirements are integral to stakeholder acceptability and price stability	Price Stability
Compensate the owners of existing transmission assets/ Encourage cost recovery	No need for a criterion to ensure cost recovery as it is implicit assumption. Addressed elsewhere in the Code/Commerce Act regime.	No need for a criterion to ensure cost recovery as it is implicit assumption. Addressed elsewhere in the Code/Commerce Act regime.	Cost recovery through the surplus from nodal prices and through any additional transmission charges

Green/Brunkekreeft	Frontier Stage 1	TPAG	Biggar
N/A	N/A	Incentives are addressed elsewhere in the Code/Commerce Act regime. The TPM is an allocation methodology and is **not** supposed to be a substitute for a long term contract between Transpower and its customers	Incentives – transmission provider has an incentive to provide an efficient level of quality and availability
N/A	N/A	**Beneficiary-pays –** this consideration addresses 'no worse-off' Biggar principle in the context of the current regulatory regime by imposing the condition that any charge should not exceed the parties private benefit. The TPM is a component of the regulatory contract which includes the Benchmark Agreement, Interconnection Rules and the Commerce Act.	No worse-off (costs exceed benefits) as a result of new investment or changes to the pricing and terms