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Consulting

CONFIDENTIAL

**Report and recommendation to the
Electricity Commission**

**Transmission Contract
Structure &
Counterparties**

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Summary

Under the framework recently established by the Ministry of Economic Development, the Commission is required to make two initial decisions under the new Part F of the Electricity Governance Rules. They are:

- 1 Part F transmission contract structure, such as a single transmission agreement, or separate 'physical connection', and 'use of system' (interconnection) agreements¹; and
- 2 a recommendation to the Minister of categories of 'designated transmission customers', who have the right to negotiate transmission agreements with Transpower, or to rely on the benchmark agreements as a default agreement².

These contract structure and counterparty decisions establish the basis for subsequent detailed work on transmission benchmark (default) agreements, grid reliability standards and the pricing methodology, each of which must be determined by the Commission. The timing and sequencing of these decisions was set by Government, not by the Commission.

Part F itself, the Government Policy Statement and the Electricity Act provide some guidance to the Commission on how it must approach these decisions. Also, some practical and legal constraints on the decisions open to the Commission are imposed by the regulatory framework, and by the physical characteristics of transmission and the New Zealand electricity industry.

However, the regulatory framework is not explicit in terms of the regulatory process and analysis required of the Commission to arrive at its proposed decisions.

Accordingly, the Commission tendered for external advisers to develop an appropriate methodology to identify and analyse viable options, and to make a firm recommendation in relation to transmission contract structure and counterparties. As the advisers appointed, this paper sets out our approach, analysis and recommendations.

Our approach to identify and assess options for contract structure and counterparties entailed:

- 1 Defining the objectives of the work and scope of the decisions

¹ Part F, Section II Rule 2.1

² Part F, Section II Rule 2.2, and also Rules 3 and 4 relating to the content and purpose of transmission agreements and benchmark agreements.

- 2 Identifying all key statutory and policy objectives and industry features which are relevant to the decisions
- 3 Translating the objectives and features into threshold criteria, used to “screen” options
- 4 Identifying potential feasible options, taking account of experience in other jurisdictions
- 5 Assessing the options against threshold criteria, and
- 6 Conducting regulatory and economic impact analysis to determine the extent to which each option provides a net social benefit.

We concluded that there were only three viable options that met threshold criteria, namely:

Option 1 (and base case)

A single contract structure, such that a single ‘unified’ agreement covers all Part F transmission services (connection, use of system, or such other disaggregated transmission services as may be applicable). Separate contracts would be entered between Transpower and each counterparty. The counterparties would be the physically connected parties, i.e. distributors, generators and direct customers. The contract would include separate (optional) sections or schedules for services applicable to different categories of customer.

This is the base case. It should not be seen as status quo, in that benchmark agreements developed consistent with this model will differ from current Transpower connection terms at least to the extent that the regulatory regime now prescribes new and different principles, objectives and content for these contracts.

Option 2

The contract structure would comprise separate contracts for physical connection, and ‘use of system’, with counterparties as follows:

- physical connection contracts between Transpower as grid owner and physically connected parties, and
- use of system contracts entered between Transpower as grid owner and some /all of distributors, generators, and directly connected customers.

As with Option 1, each contract may include separate (optional) sections or schedules for services applicable to different categories of customer.

Option 3

Option 3 differs from Option 2 in only one respect; that is that the downstream (offtake) counterparty is the retailer, rather than the distributor. Hence, the contract structure would comprise separate contracts for physical connection, and 'use of system', with counterparties as follows:

- physical connection contracts between Transpower as grid owner and physically connected parties (distributors, generators, and direct customers), and
- use of system contracts entered between Transpower and some /all of: retailers, generators, and direct customers.

As with Option 1, each contract may include separate (optional) sections or schedules for services applicable to different categories of customer.

The final step was to apply an appropriate economic framework for deciding contract structure and counterparty issues, with the framework to be pragmatic, and consistent with Part F criteria.

We applied a net social benefit test, comparing potential options with a base case. The difference between benefits and costs indicated the value of an option to society (in this case, all electricity industry stakeholders and electricity market). Transfers of wealth arising from the decision were not considered, although incentives created by the decision were relevant.

The regulatory and economic impact (cost benefit) analysis undertaken is considered appropriate, (though there are acknowledged difficulties in quantifying impacts) as it is:

- consistent with well understood processes for government policy development
- structured, and transparent, and
- consistent with the Commission's statutory objectives and government electricity policy.

In order to undertake this analysis, we drew on past debates, limited interviews, and industry experience to identify the following categories of potential material costs or benefits associated with each option. The categories are:

Potential Positive Impact/Benefit

- 1 Efficient grid investment
- 2 Holding Transpower accountable for delivering against planned grid reliability standards
- 3 Facilitating efficient grid management decisions

- 4 Optimisation of distribution/transmission investment and management
- 5 Facilitating economic transmission alternatives
- 6 Increased retail competition
- 7 Facilitating future industry development

Potential Negative Impacts/Costs

- 1 Transition costs
- 2 Delayed grid investment
- 3 Ongoing transaction costs
- 4 Prudential risks and credit costs
- 5 Retail price impacts (particularly for small customers)

The analysis concluded that, within the new regulatory environment, and given:

- that the content and form of transmission agreements will be determined by an independent regulator in accordance with statutory principles, and
- the indirect and limited role of monitoring and enforcement of those transmission agreements to influence the matters of concern to stakeholders,

there are no significant material benefits with either Option 2 or Option 3, and there is the potential for significant additional costs with Option 3.

Hence, we concluded that more detailed quantification of costs is not warranted, and we recommend that the Commission adopt Option 1.

Introduction

This paper has been prepared by Farrier Swier Consulting and Concept Consulting Group to:

- describe the decisions required of the Electricity Commission (the Commission) in relation to Transpower's transmission contract structures and counterparties under the new regulatory framework developed by the Ministry of Economic Development (Section 1.1)
- outline the framework and approach adopted to arrive at options and recommendations (Section 2)
- set out statutory and policy objectives for the decisions, that drive threshold criteria for analysis (Section 3)
- determine threshold criteria which arise from industry features (Section 4)
- set out feasible options for analysis (Section 5)
- outline our methodology, assessment and recommendations (Section 6)
- summarise Part F of the Electricity Governance Rules (the Rules), and its interaction with other Parts the Rules, and describe the role of Part F transmission agreements in the New Zealand electricity market context (Annexure 1)
- describe relevant industry features that impact on the choice of options, and on their analysis (Annexure 2).

The decisions subject of this paper relate only to regulated Transpower contracts, and only to transmission contracts under Part F of the Rules; not to matters of system operation that are covered in Part C and separate contracts, or to services that may be provided by Transpower outside of the regulated contract regime.³

The contract structure and counterparty decisions are the first of a number of important decisions required by the Commission; these decisions will

³ Though this distinction between system operation and asset ownership is made in the Rules, in practice the delineation is not always clear.

establish the framework for subsequent development of benchmark agreements, the transmission pricing methodology, and ultimately, transmission contracts that underpin payment for approved investments in the transmission grid.

Under Part F, there will be three key phases at which the input of the contract counterparty may influence outcomes. These phases are:

Stage	Actions
Contract negotiation	Striking agreement on rights and obligations, including any variations from benchmark agreements and grid reliability standards
During regulatory consultations	Participation in Commission processes around benchmark agreements, grid reliability standards, the pricing methodology, and proposed grid investments
Performance monitoring and enforcement	Day to day monitoring and enforcement of contracts that are on foot. May include mechanisms to deal with modifications, variations, new connections or services, and any rights to binding dispute resolution in relation to such matters.

At the time of preparing this paper, anticipated revisions to the Government Policy Statement (GPS) and the *Electricity and Gas Industries Bill 2003* have not been published.

Accordingly, this paper and analysis are based on:

- 1 Part F of the Rules in the form proposed to be made by the Ministry of Economic Development on 28 May 2004
- 2 The introductory print of the *Electricity and Gas Industries Bill 2003*
 - We have assumed that amendments to the *Electricity Act* proposed in the *Electricity and Gas Industries Bill* will be enacted consistent with the introductory print of the Bill, before the decisions are made by the Commission, and that no material changes affecting these decisions will be made to the Bill.
- 3 The draft GPS released by the Ministry of Economic Development in September 2003.

1.1 Decisions required by Commission

Section II rule 2 of Part F of the Rules requires the Commission to:

- consider, consult and *determine* an appropriate structure for transmission agreements (such as a single agreement that covers all

aspects of connection to the grid, or separate agreements for 'connection' and 'use of' the grid): rule 2.1

- consider, consult and *recommend to the Minister* categories of participants required to enter into transmission agreements (i.e. contract counterparties): rule 2.2

The transmission agreement structure determined by the Commission will form the structure of benchmark agreements which are to be developed in accordance with rule 4.

1.2 Timing and sequencing

Figure 1 depicts our understanding of Part F requirements for the interaction and sequencing of decisions subject of this paper, with other regulatory processes required of the Commission and stakeholders in implementing Part F. Table 1 summarises the timetable for this study and decisions.

Figure 1 – Part F Timing & Sequencing

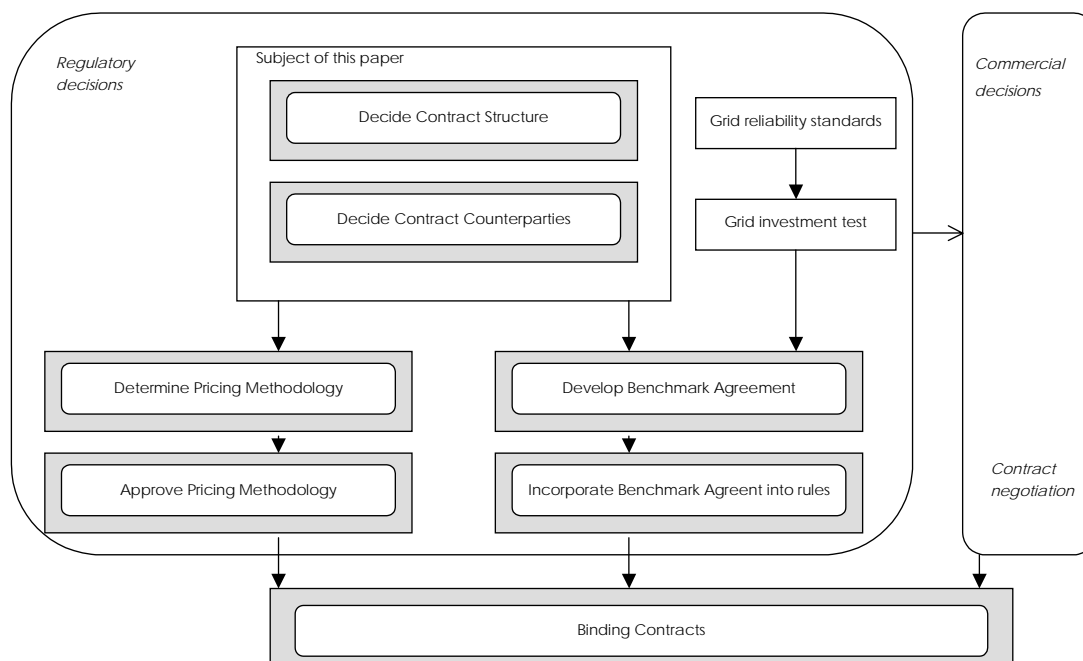


Table 1 - Timetable for finalising decisions on contract structure and counterparties

Date	Commission actions
May 2004	Consider consultant's recommendations and this paper
Early June 2004	Publish proposed contract structure and counterparties, and releases this paper for stakeholder information
Early July 2004	Consider submissions, invite consultants to review recommendations in light of submissions
End July 2004	Make final decision on contract structure, recommendation to Minister on counterparties

1.3 Definitions and discussion

Contract structure

'Contract' has its normal legal meaning, i.e. a legally binding agreement between two or more parties by which they acquire rights and owe duties and obligations in respect of the subject matter of that agreement⁴. 'Transmission contract' or 'transmission agreement' means a contract with Transpower as grid owner for transmission services that relate to physical connection to, or conveyance⁵ of electricity on the grid.

Consistent with the context of Part F and the example provided in Section II, we interpret 'contract structure' to mean

- the number of transmission contracts required⁶, and
- if more than one type of contract is required, then the general description of matters⁷ covered in each proposed category of contract.

Contract counterparties

In this paper, the term 'counterparties' refers to categories of **participants** which are **designated transmission customers** required to enter into transmission agreements with Transpower under Section II rule 3.1.1. For consistency, the terminology used to describe counterparties should align with defined terms in Part A of the Rules.

⁴ Gerbic P Lawrence M, Understanding Commercial Law, Butterworths 1988

⁵ 'Conveyance' is the term used in the Electricity Act. A term frequently used internationally is 'use of system', and New Zealand industry participants often refer to 'interconnection'.

⁶ Part F Section II rule 2.1.2

⁷ That is, of the matters listed in Section II rule 3.2 for the content of transmission agreements. See Annexure 1 to this paper.

Subsequent Commission tasks

Part F requires that the comprehensive work to describe detailed transmission services, assets associated with those services, and cost allocation, will form part of subsequent analysis that underpins the Commission's decisions on the pricing methodology, grid reliability standards, and benchmark agreements. We assume that the detail developed will reflect acknowledged theories of contract design and incentives.

Observations on definitions:

Contract structures should be defined at a sufficiently high level to facilitate subsequent development of matters (including detailed service descriptions, price allocation, and tariffs) as required by the Rules.

Categories of contract counterparties should be sufficiently broad so as not to preclude subsequent development of matters (including detailed service descriptions, and price allocation to beneficiaries of those services) as required by the Rules.

Defining the boundary between 'connection' and 'use of system'

Some high level assumptions are necessary about the distinction between 'connection' and 'use of system' to enable analysis of options.

Observations:

The exact services (and associated assets) for (a) connection; and (b) use of system, will be defined when the Commission completes its Part F work on the pricing methodology, grid reliability standards, and benchmark agreements.

"Connection" is used in this paper to refer to physical connection to Transpower's grid assets. 'Connection' would cover at least matters described as "point connection" in Part B of Transpower's current standard form Connection Contract, and could also cover some matters currently in Part C of the standard contract.

"Use of system" describes the provision and use of the grid for conveying electricity to or from connection points. "Use of system" is expected to cover at least some of the matters referred to as "grid connection" in Part C of Transpower's current standard form Connection Contract. In New Zealand, industry participants also use the term "interconnection services" in this context⁸.

⁸ In this paper, we do not use the term 'interconnection' in this context, to avoid confusion with international concepts of transmission interconnection as the connection between two transmission grids (potentially operating in different markets and jurisdictions).

2

Framework and approach

Good regulatory practice requires transparent and objective decision-making. In turn, the analysis to support such decisions should be as robust as possible within time allowed, and based on an appropriate conceptual framework.

Our approach to applying the framework has been tailored to meet the time constraints for the decision, to capture significant problems and interactions, and to avoid the risk of “over-complicating” decisions, by clouding the analysis with unrealistic expectations of problems that could be addressed in this process.

2.1 Interactions & objectives

The framework and approach has been designed to capture and recognise:

- the context for this decision (and the need for this context to be reflected in the problem definition, the analysis and the interpretation of the recommendations)
- the need to ensure related but not directly relevant issues do not unnecessarily distort the decision-making process
- the timeframe for this decision
- the potential controversy of these decisions and the level and extent of past debate on the issues
- the need to capture industry views and information, notwithstanding the short timeframe and subsequent formal Commission consultation processes
- the value in learning from experience in other jurisdictions, recognising that direct translation is not necessarily appropriate, and
- the need to recognise the materiality of the decisions (and not over or understate their importance).

2.2 Underpinning assumptions

Key assumptions and principles underpinning the framework and our approach to this work include:

- From a technical and safety perspective, any party physically connected to the transmission grid requires some form of contract with Transpower to deal with that interface.
- It *is* possible to define counterparties and contract structures without impeding subsequent decisions on detailed service definitions, beneficiaries, and cost allocation.
- An option which defines the counterparty, but not the contract “subject”, is meaningless and cannot be evaluated.
- Benchmark agreements must include service definitions, service levels, and service measures to the extent practicable⁹, and that detail will be developed jointly with the pricing methodology and associated analysis of the beneficiaries of each service.
- Benchmark agreements need to establish clear and unambiguous accountabilities.

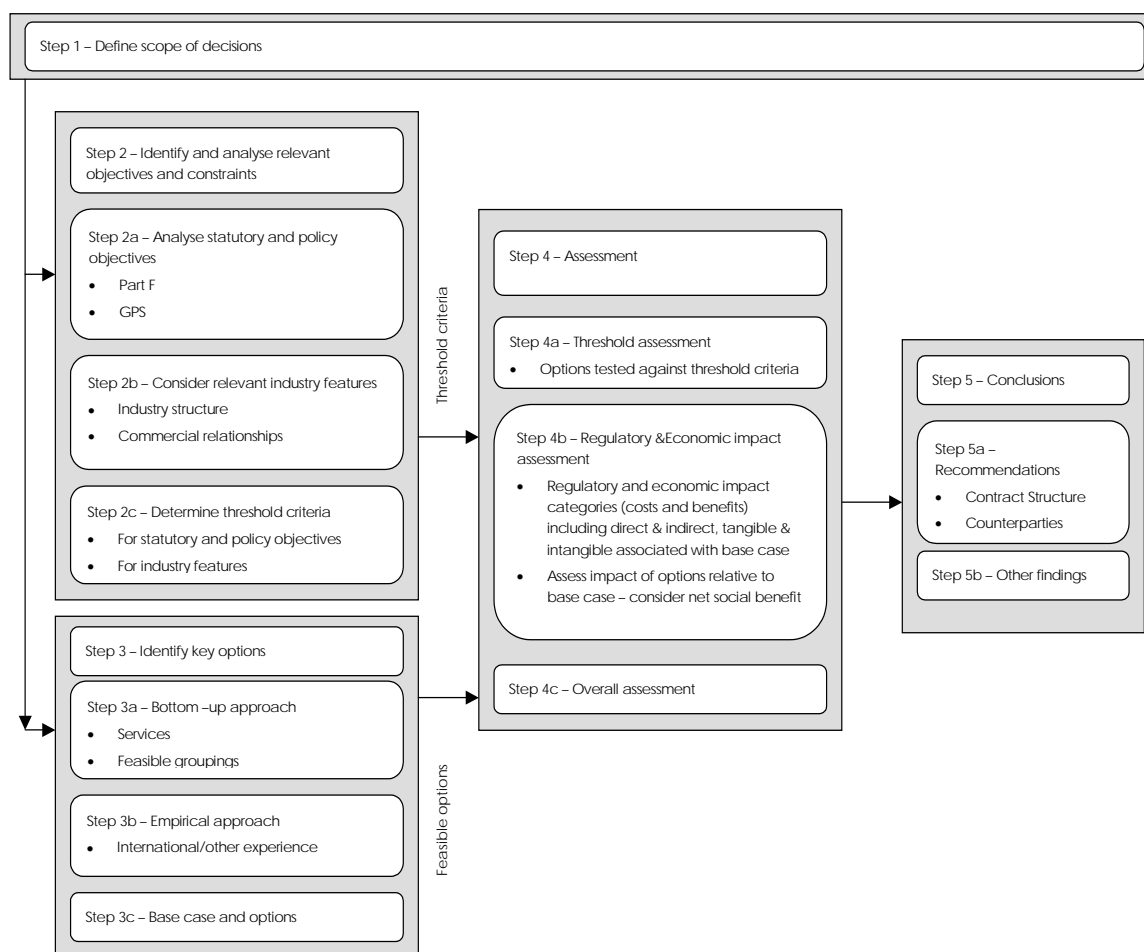
2.3 Overall framework

The framework for developing our recommendations is set out in Figure 2 below. It entailed:

- 1 defining the objectives of the work and scope of the decisions
- 2 identifying all key statutory and policy objectives and industry features which are relevant to the decisions
- 3 translating the objectives and features into threshold criteria, used to “screen” options
- 4 identifying potential feasible options, taking account of experience in other jurisdictions
- 5 assessing the options against threshold criteria, and
- 6 conducting regulatory and economic impact analysis to determine the extent to which each option provides a net benefit.

⁹ See section II rule 4.3.1.5 on the content of benchmark agreements.

Figure 2: Framework for developing recommendations



2.4 Regulatory and economic impact assessment

The terms of reference for this study required us to apply an appropriate economic framework for deciding contract structure and counterparty issues. That framework was required to be pragmatic, and consistent with Part F criteria.

We have applied a net social benefit test which, comparing potential options with a base case to determine whether an option offers net benefits. The difference between benefits and costs indicated the value of an option to society (in this case, all electricity industry stakeholders and electricity market). Transfers of wealth arising from the decision (and the identity of the 'winners' and 'losers') were not considered, although incentives created by the decision were relevant.

This approach is consistent with Government's usual practices in policy development¹⁰, whereby a regulatory impact statement considers:

- *Problem definition* - explaining the nature and extent of the problem; clear evidence that a problem exists and that government action is justified; and quantification where possible.
- *Analytical framework* - objectives, and possibly sub-objectives; principles; costs and benefits (direct and indirect impacts; tangible and intangible impacts; administrative and compliance impacts)

In establishing the particular net social benefit test for this study, we consider that:

- The potential benefits to society relate only to an efficient, safe electricity industry (i.e. for electricity industry participants, shareholders, and users).
- Net benefits should incorporate all costs and benefits, direct and indirect, tangible and intangible associated with the options relative to a base case.

The outcome is an overall assessment of the likelihood of a net benefit to society from implementing an option.

Test - Net benefit to society

The preferred option should seek to maximise net benefits to society of an efficient electricity industry, where the assessment includes costs and benefits that are direct and indirect; tangible and intangible, relative to a base case.

To apply the net social benefit test, we analysed regulatory and economic impacts. Though there are inherent difficulties in quantifying costs and benefits, the benefits of this approach to identifying and assessing positive and negative impacts to society (costs and benefits) of a potential option are that it:

- provides a logical, structured approach
- allows judgements to be made more transparently than other possible methods.

We note that while the application of a net social benefit test is not an express requirement on the Commission¹¹ it is consistent with the Commission's statutory objectives, government policy, the matters to which the Commission must have regard (section II rule 2.2.1), and sound regulatory policy.

¹⁰ A Guide to Preparing Regulatory Impact Statements, Competition and Enterprise Branch, Ministry of Economic Development, 16 March 1999.

¹¹ We note that the Commission is not bound by the assessment processes required of the Commerce Commission.

Conclusion

Regulatory and economic impact (cost benefit) analysis is appropriate for undertaking the economic analysis in Step 2 of the Assessment, (notwithstanding inherent difficulties in quantifying impacts) as it is:

- Consistent with well understood processes for government policy development
- Structured, and transparent
- Consistent with the Commission's statutory objectives and government policy

2.5 Sources of information

Our approach to applying the framework involved:

- Reviewing publicly available information (such as submissions made during the development of Part F; Transpower's current standard form transmission contracts¹², and experience in other jurisdictions) to provide input to:
 - Potential options
 - Assessment of options
- Reviewing the statutory and policy context to provide input to:
 - Potential options (and constraints on options)
 - Defining threshold criteria
 - Assessment of options
- Limited stakeholder interviews to provide input to and inform:
 - Potential options
 - Assessment of options against criteria
 - Economic impact assessment

2.6 Consultation

Given this approach and the time constraints, the Commission's formal consultation under Part F is considered important to test our conclusions and assessments with affected stakeholders, to ensure that material impacts have not been omitted, and to enable any necessary adjustments to the analysis prior to the Commission making its final decision on structure, and recommendation to the Minister on counterparties. That decision and recommendation must be made by the Commission within 20 business days after consultation closes¹³.

¹² Transpower's standard contracts were recently amended to exclude matters relating to operation of the transmission system, now covered by Part C of the Rules.

¹³ Section II rules 2.1.5.1 and 2.2.4.1 fix these time frames.

Statutory and policy objectives

A valid decision by the Commission must take into account such principles, constraints and purposes as are required by its statutory decision making framework. This section describes relevant statutory and policy objectives that must be considered in making these decisions, and that underpin the threshold criteria set out in section 3.3.

3.1 Statutory requirements

The statutory framework for the Commission's decisions on transmission contract structure and counterparties is drawn from:

- the *Electricity Act 1992* (including amendments currently proposed in the *Electricity and Gas Industries Bill*)
- the Electricity Governance Regulations (insofar as they support the making and amendment of Rules)
- Part F of the Electricity Governance Rules, and
- any statement of government policy with which the Commission is directed by the Minister to comply.

Key objectives and principles are summarised below; in order to make its decisions on transmission contracts, the Commission must assess the extent to which its decisions could achieve these objectives.

3.1.1 Summary of statutory requirements for Commission's decisions

The key regulatory requirements for the decisions on contract structure and counterparties are:

- **Part F Rules dictate requirement, principles:** The decisions must be made by the Commission in accordance with requirements and principles to be specified in Section II of the Part F Rules.

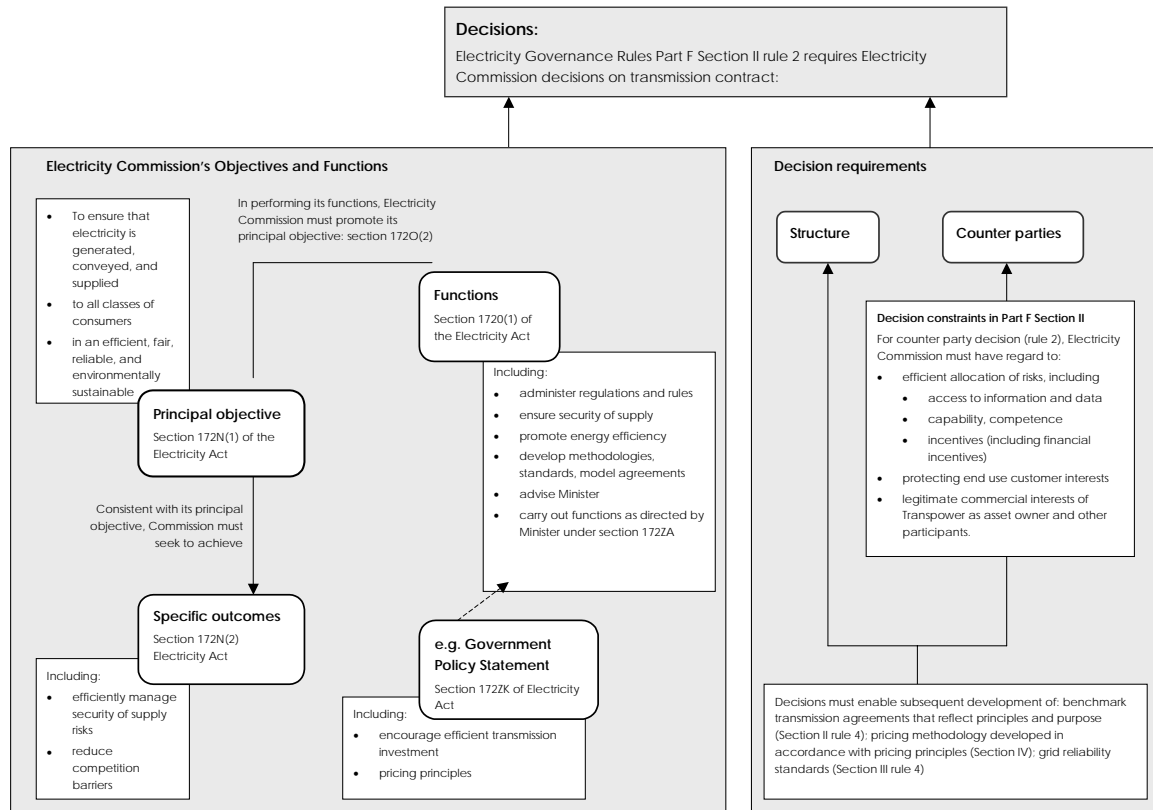
- **Functions of the Electricity Commission:** Administering and enforcing those Rules is one of the functions of the Commission under the Electricity Act 1992. The Commission's functions also include giving effect to any Government Policy Statements where so directed by the Minister.

The Commission is also responsible for common quality and real-time security. This is dealt with through Part C of the Rules and associated contracts. It is not directly relevant to decisions on contract structure and counterparties, except to the extent that:

- Part F transmission contracts should be consistent with Part C¹⁴, such that Parts C and F work in an integrated and consistent manner, and
 - there is benefit in contracting symmetry between contacts supporting operational matters, and those supporting asset ownership, use and connection.
- **Promote principal objective:** In performing its functions, the Commission must promote its principal objective.
 - **Principal objective:** The principal objective of the Commission in relation to electricity is set out in the Electricity Act. The Commission is to seek to ensure that electricity is generated, conveyed, and supplied to all classes of consumers in an efficient, fair, reliable, and environmentally sustainable manner.
 - **Specific outcomes:** Consistent with its principal objective, the Commission is to seek to achieve a number of specific outcomes set out in the Act, some of which could relate to the transmission contract decisions.
 - **Support subsequent decisions:** The decisions must enable subsequent development of other Parts of Part F. Specifically, the decision must support: benchmark transmission agreements that reflect principles and purpose set out in Section II rule 4; the grid reliability standards, grid upgrade and investment processes set out in Section III; a pricing methodology developed in accordance with Section IV; and future FTRs to be developed in accordance with Section V.

¹⁴ Requirements for interaction between Part C and Part F are set out in Part F, Section I rule 3. The Commission must consider the desirability of Part C and Part F operating in an integrated and consistent manner.

Figure 3 - Summary of statutory requirements



3.2 GPS objectives for transmission

Most of the transmission policy objectives covered in the GPS¹⁵ are already captured in Part F itself, in the Electricity Act 1992, or in the Electricity and Gas Industries Bill 2003. The GPS also provides some additional guidance as follows.

The Government considers that the way in which transmission services are provided and priced impacts directly and indirectly on all parts of the electricity industry, the economy and the environment; and that transmission has strong natural monopoly characteristics¹⁶.

Government's objectives for the provision of transmission services are¹⁷:

¹⁵ Note: these comments are based on the draft Government Policy Statement as released by the Ministry of Economic Development in September 2003.

¹⁶ Paragraph 65 of the GPS

¹⁷ Paragraph 66 of the GPS

- the services are provided in a manner consistent with the Government's policy objectives for electricity
- the services should be provided at the standards of quality and security required by grid users as determined by the Commission
- the efficiency of transmission services should be continuously improved so as to produce the services users want at least cost, and
- the services are priced in a manner that:
 - is transparent
 - fully reflects their costs including risk
 - facilitates nationally efficient supply, delivery and use of electricity
 - promotes efficient use of Transpower's resources, and
 - promotes nationally efficient use of transmission services by grid users.

Transmission alternatives

The GPS¹⁸ also calls for development of grid investment plans that “...demonstrate that the expenditure proposed delivers the greatest net benefit (after taking into account alternative network options, and investment in local generation, demand-side management and distribution network augmentation)”.

Financial Transmission Rights

The detailed policy for proposed future FTRs is set out in Appendix One to the GPS, and provides as follows:

“FTR policy framework

Transpower should continue to receive loss and constraint rentals, and should use the rentals to fund an FTR product.

A market for short to medium term FTRs should be introduced covering the interconnected grid (with or without spur lines).

Some or all of Transpower's off-take customers (including distribution companies and direct connect customers) should be offered a long term allocation of FTRs. If a distribution company prefers that its allocation be given to an agent appointed by the distribution company and approved by the Commission, Transpower should allocate the relevant FTRs to the agent. FTR recipients should be able to refuse an allocation.

Recipients of allocated FTRs should be able to put their FTRs into an auction and assign reserve prices in accordance with the process

¹⁸ See paragraph 70 of the GPS.

developed by the Commission. In this case, they should receive the value assigned to those FTRs by the auction (subject to the price exceeding the reserve). If the value assigned by the auction does not exceed the reserve price, the original recipient should retain the FTR.

Transpower should pass any excess FTR auction income (auction income not paid to those who put allocated FTRs back into the auction), residual rentals (rentals not utilised in the FTR market) and any income received as payment for an FTR allocation, less appropriate expenses, to its customers.

A distribution company should pass through rental-related or FTR-related cash flows to the distribution company's customers, retailers, and/or end users. The pass through should be transparent, should not discriminate between parties in a like position, and should as far as possible be non-distortionary. It should be consistent with the guiding principles for an FTR market, and in particular have due regard to promoting competition between retailers.

Distribution companies should be able to recover reasonable costs relating to their role under this policy statement."

Observations:

The decisions on transmission contract structure and counterparties must not preclude subsequent development of FTRs, nor impede government's policy objectives to promote transmission alternatives where efficient.

3.2.1 Subsequent decisions for the Commission

Grid reliability standards

In addition, Government policy¹⁹ and the design of Part F recognise that:

- the core grid is essential to all connected parties, and should be designed, constructed, maintained and operated to a common set of standards (the grid reliability standards)
- at the periphery, customers should have some flexibility over standards, provided the integrity of the core grid is not compromised.

Observations on grid reliability standards

- The Commission is to develop grid reliability standards
- Transmission contracts (including benchmark agreements) will apply the grid reliability standards

¹⁹ See paragraphs 67 to 69 of the GPS.

- Transmission services (when developed in benchmark agreements and the pricing methodology) should be provided at standards of quality and security required by grid users, but should not compromise obligations in relation to system operation
- Integrity of the core grid requires central decisions and management. However, there may be some flexibility over standards at the periphery of the network, so long as the integrity of the core network is not compromised.
- Flexibility may be achieved through
 - regional variations in the Commission's setting of the grid reliability standards
 - individual transmission contracts negotiated between Transpower and transmission customers that vary standards (with regulatory oversight to ensure that other users are not affected)
 - local quality variations on operational issues that may be outside Part F.

Transmission pricing methodology

The Commission has a separate work stream under way on the transmission pricing methodology and pricing. The GPS and Part F framework provide for Transpower to determine its total revenue requirement (covering both sunk and new investments) subject to the constraints of the Commerce Commission's thresholds regime. The transmission pricing methodology should determine how this total revenue is recovered from connected parties.

Prices determined in accordance with the approved transmission pricing methodology will be incorporated in transmission agreements unless the parties agree otherwise (by way of a variation from the benchmark agreements, with Commission oversight).

The pricing principles set out in the Part F Rules are:

- The costs of connection and use of system should as far as possible be allocated on a user pays basis.
- The pricing of new and replacement investments in the grid should provide beneficiaries with strong incentives to identify least cost investment options, including energy efficiency and demand management options.
- Pricing for new generation and load should provide clear locational signals.
- Sunk costs should be allocated in a way that minimises distortions to production/consumption and investment decisions made by grid users.
- The overall pricing structure should include a variable element that reflects the marginal costs of supply in order to provide an incentive to minimise network constraints.

- Transmission pricing for investment in the grid should recognise the linkages with other elements of market pricing (including the design of the financial transmission rights regime and any revenues from financial transmission rights).

Benchmark agreements

The Commission must develop a benchmark agreement or agreements based on the structure it approves with these decisions. The content of such agreements is set out in Annexure 1 of this paper. Based on the regulatory framework and industry features, it is reasonable to assume that the Commission will require flexibility in developing the benchmark agreements (in conjunction with the pricing methodology) to determine boundaries of the services provided under Part F and Part C. This is because:

- Transpower performs a number of inter-related functions.
- There are no precise boundaries between assets, functions, and in some instances services, associated with:
 - system operation under Part C
 - asset ownership, management, maintenance and operation under Part F
 - physical connection to the system.

Interaction between Parts C and F is set out in Part F, Section I rule 3, requiring the Commission to consider the desirability of the two Parts operating in an integrated and consistent manner. The Commission needs flexibility to give effect to this requirement, and to consider proposals or develop detailed provisions that optimise the interaction between the two Parts as part of its ongoing work program.

Observations:

Therefore, the contract structure and counterparty decisions must:

- not restrict the Commission's subsequent ability to develop benchmark agreements that meet Part F requirements (including grid reliability standards, and the pricing methodology), and
- support reliability and safety (integrity of the core grid), and the ability to reflect approved variations from standards sought for specific regions or end users.

3.3 Threshold criteria from statutory & policy framework

Based on the analysis set out in sections 3.1 and 3.2 above, the following criteria must be applied to each option considered.

Table 2 - Threshold criteria

Criteria	
1.	Could there be <i>prima facie</i> public benefits with the proposal?
2.	Could the option promote economic efficiency in grid investment and management?
3.	Could the option promote a safe and reliable grid?
4.	Could the interests of end use customers be protected appropriately (i.e. can customers receive services they want, at economically justifiable prices)?
5.	Could the option facilitate retail competition?
6.	Does the option enable development of a pricing methodology that satisfies pricing principles?
7.	Does the option allow development of transmission alternatives?
8.	Does the option allow development of benchmark agreements that meet the rule requirements for content?
9.	Does the option allow future development of FTRs?
10.	Does the option allow parties to meet obligations under Part C of the Rules?
11.	Prima facie, does each proposed counterparty have (or can it reasonably acquire): <ul style="list-style-type: none"> ▪ access to information and data ▪ capability, and ▪ competence, to meet its proposed obligations?
12.	Is there any significant material adverse impact on the legitimate commercial interests of Transpower, distributors, retailers or generators where that impact: <ul style="list-style-type: none"> ▪ cannot reasonably be managed, and ▪ could not conceivably be outweighed by 'common good'?

Industry features

Features of the transmission sector and the New Zealand electricity industry are central to the framework and the recommendations in this paper.

- Feasible options must be determined in the context of the New Zealand electricity industry.
- Industry structure and commercial arrangements give rise to threshold criteria.
- The net benefit to society of any feasible option relative to the base case must be assessed in the context of the New Zealand industry arrangements, including the changes being implemented through the Electricity Commission and Part F.

Annexure 1 describes features of the transmission sector and the New Zealand electricity industry that we consider relevant to the recommendation, analysis and the Electricity Commission's decisions.

4.1 Threshold criteria associated with industry features

In addition to the threshold criteria flowing from the Act and Rules, the analysis of the industry structure set out Annexure 1 suggests that the following criteria also must be applied to each option considered²⁰.

Table 3 – Additional threshold criteria

	Criteria
1	Is the option compatible with incentives created through the threshold regime for network businesses?
2	Is the option capable of implementation within the existing industry structure, and commercial arrangements?

²⁰ These are in addition to criteria flowing from statutory and policy objectives set out in section 3.3 of this paper.

Options

The options for transmission structure and counterparties are guided by the examples and factors set out in the rules, and the definitions set out in section 1.3 of this paper. Unconstrained, it would be possible to develop a myriad of options for contract structures and counterparties. However, the key options are reduced due to practical issues and statutory requirements.

5.1 Constraints on options

The assumptions set out in section 2.2 of this paper lead to a number of implications for feasible options, as summarised in Table 4.

Table 4 - Assumptions and implications affecting option selection

Assumption	Implications for options
From a technical and safety perspective, any party physically connected to the transmission grid requires some form of contract with Transpower	There must be <i>at least</i> an agreement covering connection with physically connected parties, i.e. distributors, generators, and directly connected grid customers.
An option which defines the counterparty, but not the contract "subject", is meaningless and cannot be evaluated.	Therefore, the 2 decisions need to be considered in parallel rather than sequentially (and options must define both the contract structure and counterparty).
Rights and obligations flow from being a 'designated transmission customer' under Part F	The contract counterparties must be described in sufficient detail, with a link to the type of agreements applicable, such that there is certainty to trigger the statutory rights and obligations that flow from categorisation as a designated transmission customer under the Rules. To avoid the risk of duplication and uncertainty, the Commission must define the downstream (offtake) use of system counterparty which is the intermediary between Transpower and end use customers.
It is possible to define counterparties and contract structures without impeding	The description of contract structures must be at a sufficiently high level so as not to pre-empt or

Assumption	Implications for options
subsequent decisions on detailed service definitions, beneficiaries, and cost allocation	preclude likely detailed services/ price descriptions. The boundaries between contract categories cannot be clearly established at this time. The decision on counterparties must include all likely categories of system users to which the pricing methodology may allocate costs.
Benchmark agreements must include service definitions, service levels, and service measures to the extent practicable, and that detail will be developed in tandem with the pricing methodology and associated analysis of the beneficiaries of each service.	As above. Should avoid any ambiguity relating to the overall contract structure; in particular, should stipulate the appropriate downstream (offtake) counterparty (distribution lines business, or retailer).
Benchmark agreements need to establish clear and unambiguous accountabilities. In relation to contract counterparties, the potential for ambiguity is limited to the downstream counterparty in relation to small customers (the upstream counterparty, if relevant, is always the generator).	Need to determine whether the retailer or distributor is to act as the intermediary between Transpower and end use customers.

5.2 Bottom up approach not possible

Our methodology called for a 'bottom up' approach to developing viable options to consider. Analysis below showed this was not possible.

5.2.1 Building block "services" for options?

It is theoretically possible to break down into many categories the various assets, functions and services that relate to grid ownership, management, use and connection; the Commission may elect to do so in developing benchmark agreements. However, in practice, a detailed categorisation is not practical, feasible, nor common international practice for an integrated transmission network.

Given the assumptions and implications set out in Table 4, we concluded that it is only possible at this time to disaggregate transmission contracts into two types, i.e. connection; and use of system (as described in section 1.3 of this paper). We also consider that the boundaries between these two categories cannot be defined meaningfully at this time, without pre-

empting important subsequent work to be completed by the Commission in:

- applying the pricing principles to develop the pricing methodology
- developing the grid reliability standards
- developing benchmark agreements
- considering proposed variations from benchmark agreements and grid reliability standards) in negotiated transmission agreements (which may include regional variations), and
- dealing with interface issues between Parts C and F of the Rules.

The exact boundary between operational matters and common quality (under Part C of the Rules) and transmission asset ownership (under Part F) is also imprecise. The requirement on the Commission is to have regard to the desirability of Parts C and F operating in an integrated and consistent manner²¹.

Conclusion:

It is not feasible at this stage to define detailed service component building blocks. The "smallest" feasible contract building blocks are:

- Use of system
- Connection.

This high level grouping does not constrain the Commission's flexibility when developing the benchmark agreements to break down types of services (and recipients) into categories, possibly as separate, optional sections within those agreements.

5.2.2 Potential counterparties – market participants

Potential counterparties for Part F transmission contracts are limited under the existing industry statutory regime to **participants** defined in Part A of the Rules and the Electricity Governance Regulations i.e.: generators, retailers, distributors, and consumers with a point of connection to the grid.

5.3 Empirical approach to developing options

A literature review of international experience and developments in transmission services and pricing showed:

- a range of options that included those set out in section 5.4 below

²¹ See Part F Section I, rule 3.

- no other feasible options that we believe could be meaningfully applied in the New Zealand context.

The review also provided a number of insights that are useful to inform our analysis of options.

5.3.1 International learning

We make the following observations on international developments relevant to the options.

- Decisions on contract structures and counterparties generally are made in the context of the overall regulatory and legal framework, and are often part of a wider industry reform package. For example, in Australia, states reviewed and developed different transmission connection and use of system contracts in the context of coordinating with a new national electricity market. No significant policy debate underpinned the decisions on structure and counterparties.
- Contracts are not necessarily used to effect or reinforce rights and obligations; arrangements may be addressed through codes or other instruments, or regulatory obligations to pay approved prices.
- Pressure for change or regulatory decisions often is driven by investment or security of supply issues; transmission investment issues exist in Australia, the United States; Europe, and South America.
- In many jurisdictions, attention (and effort) is focused on interconnection²² of transmission networks owned by different entities (each of which could have a different transmission system operator). Interconnection is pursued to facilitate competition (economic outcomes) and to help address security of supply issues.
- It is common practice to provide for either contracts or regulatory provisions to cover the physical interface between the grid owner and connected parties, though the boundary between physical connection and use of system may be problematic²³.
- The “transmission system operator” (TSO) tends to be the contract counterparty for parties wishing to connect to and use the grid.
- The functions of the transmission service operator vary; in some cases the TSO also carries out the market operation role (possibly as

²² Note: this concept of ‘interconnection’ differs from the term sometimes used by stakeholders in New Zealand to describe provision and use of the grid.

²³ See for example the recent debates in the United Kingdom regarding movement of the boundary between connection and infrastructure, *National Grid, GB Transmission Charging: Initial Thoughts*, 16 December 2003 at section 3.1.2.

a separate activity). The delineation of roles and responsibilities between the power exchange and transmission system operator varies between jurisdictions, with significant potential for overlap, requiring coordination and agreement on overall principles²⁴.

- A recent detailed study²⁵ of transmission tariffs for the European Commission noted that the charges for transmission services commonly cover the costs associated with infrastructure (capital), operation and maintenance and the costs of the transmission service operator. The costs of losses, ancillary services and congestion management are sometimes included in the transmission tariff.
- Performance or delivery of the service appears to rely on a combination of associated processes and consultations and the overall incentives and obligations created through the legal and regulatory framework, rather than contractual obligations.
- The definition of the “transmission service” may occur in agreements, or in regulatory instruments. Typically, the service is defined at a high level, as in the Great Britain transmission licence below.

Great Britain – Transmission Licence

A “composite” transmission licence is being finalised for Great Britain, whereby transmission owners will provide services for operation by the GB transmission system operator (National Grid). The connection charge and transmission use of system charges are defined as part of the transmission system operator’s conditions.

The following definitions apply:

- “connection charges” means charges made ...by the system operator for the carrying out ... of works and provision and installation of electrical plant, electric lines and meters in constructing or modifying entry and exit points on the licensee’s GB transmission system together with charges in respect of maintenance and repair of such items in so far as not otherwise recoverable as use of system charges and in respect of disconnection and the removal of electrical plant, electric lines and ancillary meters following disconnection...
- “transmission network services” means all services provided by the licensee as part of its transmission business other than excluded services and in relation to any area of England and Wales, Great Britain the balancing services activity.
- “use of system” means use of the licensee’s GB transmission system for the transport of electricity by any authorised electricity operator.

²⁴ European Transmission System Operators, Task Force 13 - Co-operation with Power Exchanges, November 21, 2002

²⁵ *Benchmark of Electricity Transmission Tariffs prepared for Directorate-General for Energy and Transport/ European Commission*, Instituto de Investigación Tecnológica, Universidad Pontificia Comillas, Final Report, October 2002

5.4 Feasible options

Based on this analysis, and indicative stakeholder views, we concluded that the following options should be analysed.

Table 5 - Summary of options

Option	Contract Structure	Contract Counterparties		Description of Option
		Connect-ion	Use of system Upstream (injection) Downstream (offtake)	
1 (Base Case)	Combined or 'unified' contract	physically connected parties (generators, distributors, direct customers)		A single 'unified' contract, capable of application between Transpower as grid owner and each physically connected party.
2	Separate connection & use of system contracts	physically connected parties (generators, distributors, direct customers)	generators distributors direct customers	Separate contracts being: <ul style="list-style-type: none"> ▪ physical connection contracts, and ▪ use of system contracts with some /all of: <ul style="list-style-type: none"> - distribution lines companies - generators - directly connected customers
3	As above	As above	As above retailers direct customers	Separate contracts being: <ul style="list-style-type: none"> ▪ physical connection contracts, and ▪ use of system contracts with some /all of: <ul style="list-style-type: none"> - retailers - generators - directly connected customers

Option 1 (and base case)

A single contract structure, such that a single 'unified' agreement covers all transmission services (connection, use of system, or such other disaggregated transmission services as may be applicable). Separate contracts would be entered between Transpower and each counterparty. The counterparties would be the physically connected parties, i.e. distributors, generators and direct customers. The contract would include separate sections or schedules for services applicable to different categories of customer.

This is the base case. It should not be seen as *status quo*, in that benchmark agreements will differ from current Transpower connection

terms at least to the extent that the new regulatory regime prescribes new and different principles, objectives and content for these contracts.

Option 2

The contract structure would comprise separate contracts for physical connection, and 'use of system', with counterparties as follows:

- physical connection contracts between Transpower as grid owner and physically connected parties, and
- use of system contracts entered between Transpower as grid owner and some /all of distributors, generators, and directly connected customers

As with Option 1, each contract may include separate sections or schedules for services applicable to different categories of customer.

Option 3

The only difference between Option 2 and Option 3 is that the downstream counterparty is the retailer, not the distributor. Hence, the contract structure would comprise separate contracts for physical connection, and 'use of system', with counterparties as follows:

- physical connection contracts between Transpower as grid owner and physically connected parties (distributors, generators, and direct customers), and
- use of system contracts entered between Transpower and some /all of: retailers, generators, and direct customers.

As with Option 1, each contract may include separate sections or schedules for services applicable to different categories of customer.

6

Assessment of “base case” and options

Our recommendations on the appropriate counterparties and contract structures for Part F Transmission Contracts are based on a two-stage assessment of the three feasible options (being the base case and two alternatives). The assessment process (described in section 2.3) involves:

- assessing options against mandatory thresholds (to ensure statutory and policy objectives are not impeded by these decisions), and
- assessing options which meet the threshold criteria using a regulatory and economic impact analysis; the principle being that the decisions should seek to maximise net societal benefit.

6.1 Analysis of options against threshold criteria

Table 7 is a consolidated list of threshold criteria derived from statutory and policy objectives (section 3 above), and from industry features (section 4). Comments relate to the ability of options to meet the criteria.

Table 6 - Assessment against consolidated threshold criteria

Criteria		Comment
1	Could there be <i>prima facie</i> public benefits with the proposal?	All options could provide some gross public benefits (i.e. before considering costs or negative impacts).
2	Could the option promote economic efficiency in grid investment and management?	Depending upon the pricing methodology adopted, all options could be consistent with this criterion.
3	Could the option promote a safe and reliable grid?	Counterparty decisions should not impact on operational arrangements.

Criteria		Comment
4	<p>Could the interests of end use customers be protected appropriately? i.e. can customers receive:</p> <ul style="list-style-type: none"> - services they want - at economically justifiable prices 	For all options the retailers are likely to remain the key interface with end use customers.
5	Could the option facilitate retail competition?	All options are consistent with retail competition, but some may have potential detriments to the level of retail competition
6	Does the option enable development of a pricing methodology that satisfies pricing principles?	One of the key issues for pricing methodology is the allocation of costs between generators and the down stream counterparty. The three options all include generators as a counterparty.
7	Does the option allow development of transmission alternatives?	The Electricity Commission is a key decision maker in this area. However, all options include generators as a counterparty. Generators should have an incentive to promote generation alternatives to transmission under all options. Distributors will also have an incentive to promote embedded generation under options 1 and 2.
8	Does the option allow development of benchmark agreements that meet the rule requirements for content?	All options meet this criterion, but distributors (options 1 and 2) and retailers (option 3,) as down stream counterparties, are likely to have different focuses on agreement content.
9	Does the option allow future development of FTRs?	The allocation of "transmission rentals" and/or FTRs is discussed in Annexure 2, section 6. Although it may be transactionally more efficient to allocate through distributors (options 1 and 2), an allocation through retailers (option 3) is still practical.
10	Does the option allow parties to meet obligations under Part C of the Rules?	Counterparty status should not compromise the ability to meet Part C obligations under any option.
11	Is the option compatible with incentives created through the threshold regime for network businesses?	The threshold regime establishes that transmission pricing and reliability are excluded when distribution businesses are evaluated against the price and quality thresholds. Therefore all options are compatible.
12	Is the option capable of implementation within the existing industry structure, and commercial arrangements?	All options are capable of implementation within the existing arrangements.
13	<p>Prima facie, does each proposed counterparty have (or can it reasonably acquire):</p> <ul style="list-style-type: none"> ▪ access to information and data 	If retailers were to become counterparty, they would need to acquire additional capability to deal with transmission issues and contracting.

Criteria	Comment
<ul style="list-style-type: none"> ▪ capability, and ▪ competence, to meet its proposed obligations?	
14 Is there any significant material adverse impact on the legitimate commercial interests of Transpower, distributors, retailers or generators where that impact: <ul style="list-style-type: none"> ▪ cannot reasonably be managed, and ▪ could not conceivably be outweighed by 'common good'? 	The options will have materially different impacts across stakeholders. However, none of the impacts appear to be unmanageable.

Subject to the qualifications below, our assessment is that all three options could be implemented in such a way as to ensure that the criteria were met. However, the ability and efficacy of each option to meet the criteria depends to a large extent on the detail subsequently developed, such as:

- the pricing methodology, the details contained in benchmark agreements, the efficacy of grid reliability standards
- the efficacy of the Commission's consultation processes in drawing out informed debate by *all* affected stakeholders (i.e. not just from the transmission contract counterparties)
- the level of involvement that counterparties are willing to take in the development and enforcement of transmission contracts
- the approach taken by the Commerce Commission to allowing costs associated with counterparties engaging in regulatory/ contract development/ enforcement processes.

We also note that:

- Retail pricing (criteria 4) – Option 3 could expose and remove current cost smearing by lines companies, such that some individual customers may experience price shocks.
- Transmission alternatives (criteria 7) –The economic attractiveness of transmission alternatives depends on:
 - the details of any processes established by the Commission to facilitate evaluation of transmission alternatives
 - the pricing methodology (because it affects the way in which transmission costs are recovered from parties and therefore the viability of a transmission alternative to a particular party)

- the total transmission revenue/cost to be recovered (which in turn is a result of a combination of Electricity Commission investment decisions and the Commerce Commissions pricing decisions)
- detailed pricing and contractual arrangements (there are complex pricing and contractual issues that may need to be resolved, for example the nature of pricing and contractual arrangements associated with a transmission alternative that provides reliability benefits), and
- the extent to which a lines and/or retail business is able, and finds it easier, to “pass through” transmission charges compared to “passing through” the costs associated with transmission alternatives.

Conclusion

We consider that all options have the capacity to comply with the threshold criteria.

6.2 Regulatory and economic impact analysis

The methodology for undertaking regulatory and economic impact analysis requires all relevant impacts to be first identified, and then assessed.

6.2.1 Impact categories

This section identifies and comments on categories of:

- potential positive impacts or benefits, and
- potential negative impacts or costs,

to be considered in the net social benefit analysis.

The time constraints on this study limited our ability to ensure all possible impacts were identified. However, on the basis of reviewing written materials (including submissions to Part F, material provided by stakeholders and international papers and documents related to electricity transmission), limited discussions with stakeholders and our experience in similar decisions, we consider that key potential categories of impacts (costs and benefits) have been identified.

Table 7 - Categories of impacts

Category	Comments
Potential Positive Impact/Benefit	
<p>1. Efficient grid investment</p> <p><i>Potential benefits are:</i></p> <ul style="list-style-type: none"> ▪ <i>The extent to which an option generates valuable information from industry participants additional to the base case; and</i> ▪ <i>The nature and magnitude of the benefits that information can be expected to create over and above the base case</i> 	<p>Part F Transmission contracts relate to provision, maintenance, management and investment in the grid system. Because significant grid investment is forecast, a key potential benefit relates to whether the contract structure and counterparty affects investment efficiency.</p> <p>The Commission has ultimate responsible for decisions on reliability, investment and transmission services that promote economic efficiency for the whole electricity sector</p> <p>The Commission is focused both on Transpower's efficiency, and maximising efficiency for the electricity sector in total (in particular ensuring the combined generation and transmission costs are optimised).</p> <p>This paper focuses primarily on grid investment efficiency. In relation to generation and the total electricity industry, the key "tool" for ensuring generation locational signals are provided is transmission pricing. Transmission pricing principles require (inter alia) that transmission pricing for new generation and load should provide clear locational signals²⁶.</p> <p>In carrying out its functions, the Commission must rely on information generated from various sources including Transpower, industry participants and the Commission itself (including its staff and external consultants)</p> <p>The information required for the Commission to make socially optimal decisions is characterised by complexity and uncertainty. The Commission faces a significant information asymmetry problem.</p> <p>We assume that the quality and level of information and analysis provided to the Commission through consultation will affect investment decisions. To the extent "better" information is provided, we consider it would notionally be possible to affect the efficiency of investment decisions by, say, 5% (\$80M, based on \$1.6B investment).</p>
<p>2. Holding Transpower accountable for delivering against planned grid reliability standards</p> <p><i>A potential benefit is the extent to which an option increases the probability that Transpower (through contractual monitoring and enforcement rights) will undertake the planned investments, and</i></p>	<p>Part F Transmission contracts relate to provision, maintenance, management and investment in the grid system in accordance with grid reliability standards.</p> <p>However, there is a concern that Transpower:</p> <ul style="list-style-type: none"> ▪ May not undertake the planned and approved grid investments, thereby jeopardising grid performance; ▪ May not maintain and manage the system in the most efficient (lowest cost to society) way.

²⁶ See Part F Transport Rules, Section IV Rule 2.3

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Category	Comments
Potential Positive Impact/Benefit	
<i>maintain and manage the grid to deliver the planned grid reliability standards.</i>	A possible benefit arises if the choice of contract counterparty decreases the potential for these outcomes.
3. Efficiency of grid management decisions <i>A potential benefit is the extent to which an option facilitates more economically efficient grid management decisions.</i>	<p>The potential benefits of more efficient grid management decisions may be significant given the increase in transmission constraints.</p> <p>Quantification of the extent of such benefits is very difficult.</p> <p>Promoting “economically efficient” grid management decisions should take account of all associated costs and benefits including downstream costs and benefits.</p>
4. Optimisation of distribution/transmission investment and management <i>A potential benefit is the extent to which an option facilitates optimisation of distribution/transmission investment and management decisions</i>	<p>The distinction between transmission and distribution assets is often historical and subjective. The transmission/ distribution interface has the potential to vary, and for investments to be made on one side” of the interface which affect the capability and performance of “both sides”.</p> <p>As such, there is the potential for investment and management decisions to be made which are more or less close to the optimal position (from a societal perspective).</p> <p>The incentives created by economic regulation are likely to be an important consideration in whether or not the optimal position is achieved.</p>
5. Economic transmission alternatives facilitated <i>A potential benefit is the extent to which an option facilitates economic transmission alternatives</i>	<p>Government policy recognises the potential for transmission alternatives to reduce the net cost of investment. Stakeholders also note the importance of facilitating transmission alternatives.</p> <p>From a societal perspective, investment in transmission alternatives should occur where this represents the economically optimal approach to maintaining or adding to the capability of the grid.</p>
6. Increased retail competition <i>A potential benefit is the extent to which an option facilitates increased retail competition</i>	<p>A Government policy objective is to increase retail competition. There are possible benefits in facilitating entry of new retailers and increasing the level of retail competition.</p>
7. Industry development facilitated <i>A potential benefit is the extent to which an option facilitates (or does not preclude) industry development</i>	<p>A number of parties raised the potential benefit associated with decisions that either facilitate or, at least do not preclude, future evolution of the industry. The concept of “future-proofing” applies at all levels including technology, operations, commercial arrangements and institutional arrangements.</p> <p>While it is impossible to forecast the details of future industry developments, it is possible to attempt to consider broad examples of the types of directions – for example, competitive transmission services, contracted investment, independent system operation, independent system planning).</p>

Category	Comments
Potential Negative Impacts/Costs	
<p>1. Transition costs</p> <p><i>A potential cost is the extent to which an option involves additional transition costs</i></p>	<p>The development of new benchmark agreements and a new pricing methodology are likely to involve associated development of and amendment to information flows, potentially information systems etc.</p> <p>A decision to implement an option other than the base case could potentially require additional changes to billing and settlement arrangements, new information systems. In addition there may be incremental costs associated with development of benchmark agreements; and costs associated with amending retail/distributor contracts; and or retail/customer contracts.</p>
<p>2. Delayed grid investment</p> <p><i>A potential cost is the extent to which an option delays grid investment notwithstanding the transitional powers.</i></p>	<p>The timeframe for approval of grid investments is relatively tight. Therefore, there is the potential for delays in decisions to cause delays in grid investment approvals and flow on costs associated with decreased grid standards.</p> <p>We consider that this potential cost is largely mitigated by the transitional investment approval powers of the Commission.</p>
<p>3. Ongoing transaction costs</p> <p><i>A potential cost is the extent to which an option involves additional transaction costs</i></p>	<p>The new Part F arrangements, including benchmark agreements, may have new information requirements compared to the current arrangements.</p> <p>In addition, changes to the contract structure and/or counterparties could give rise to incremental costs associated with new/additional counterparties. These costs could be associated with:</p> <ul style="list-style-type: none"> ▪ Location specific reliability variation ▪ Negotiation of new connections/variations ▪ Monitoring and enforcement of contracts (including invoicing/payment)
<p>4. Prudential risks and credit costs</p> <p><i>A potential cost is the extent to which an option involves additional prudential risks or credit costs</i></p>	<p>We understand that the current commercial and pricing arrangements have the following implications.</p> <p>Transpower is exposed to relatively low credit risk; the distribution lines businesses are acknowledged to be “sound” counterparties.</p> <p>The distribution lines businesses “on-charge” Transmission costs, but incur costs associated with working capital and potentially volume risk (associated with variabilising fixed charges). Generally, the retail companies in turn are charged for transmission costs by the distribution lines business and bill customers. As with distribution lines business, the retailers incur costs associated with working capital and potentially volume risk (depending on pricing structures).</p> <p>Changing contractual arrangements (and/or pricing structures)</p>

Category	Comments
Potential Negative Impacts/Costs	
	<p>can affect the working capital requirements of each party by affecting the magnitude and basis of funds flowing. However, in theory at least, the total risk and exposure in the industry remains the same; one party may have an increased exposure but another party has a reduced exposure.</p> <p>In practice, costs and charges often do not adjust in line with theory (particularly as some of these components are “regulated”).</p> <p>It is reasonable to assume that, to the extent there is any material misalignment of costs and charges caused by the regulatory arrangements, this should be addressed through reforming the regulatory arrangements themselves.</p>
<p>5. Retail price impacts (particularly small customers)</p> <p><i>A potential impact is the extent to which an option could involve additional retail price impacts</i></p>	<p>In situations where distribution businesses adopt ICP billing for transmission charges, the retailers are afforded a “smearing or fixed to variabilising” benefit. In turn, this could be seen to assist retailers to manage prices to small customers</p> <p>Changes to the pricing methodology and/or contract structure are likely to “rebalance” prices and could potentially adversely affect prices to some small customers.</p> <p>Other customers will receive benefits; that is, the overall impact should be neutral; therefore, this is a distributional rather than a net social welfare issue.</p> <p>There is a number of ways to address this issue.</p>

6.2.2 Comments on analysis

This section summarises our analysis of the economic impact of the two alternative options relative to the “base case”. The analysis draws together conceptual theory on economic efficiency and incentives; our analysis and interpretation of the Commission’s objectives and constraints; our assessment of industry features and dynamics; and our assessment of the potential implications of effecting change to the contract structure and counterparties. In addition, our analysis has been carried out against our understanding of the overall Part F work program and industry issues.

The following points should be noted:

- In carrying out the assessment, we have had to “project forward” the effect and likely outcomes associated with the “base case” option. As the industry arrangements relevant to these decisions are undergoing change, the base case does not represent a “current status quo position”. Therefore, we have made assumptions about the likely processes, consultation and information associated with transmission investment under the part F arrangements. We have also assumed

that the benchmark agreements will be developed and implemented consistent with industry and regulatory best practice.

- The context for the decisions requires that the economic impact be assessed on a long-term basis. Accordingly, we have attempted to undertake quantitative analysis or estimates on the basis of “net present value”. Where impacts (cost or benefits) are estimated on an annual basis, we have converted these to net present value using a multiplier of 10. While this is very much a ‘rule of thumb’ (and does not necessarily reflect the cost of capital for the industry), we consider the multiplier is reasonable given the materiality of the estimates.

6.2.3 Comments on retailer incentives and transmission performance

Various factors potentially undermine the efficacy of retailers in enforcing transmission performance compliance:

- The relative cost or benefit of transmission performance to a retailer depends on that retailer’s generation position and on its overall retail portfolio.
- Free riding and coordination problems arise in relation to grid exit points.
- Retailers’ incentives relate to current (usually short term) contracts with end users.
- The technical features of a transmission grid are complex and information asymmetry is high.

Generation position / location / retail portfolio

The relative cost or benefit of transmission performance to any one retailer depends on its generation position and on its overall retail portfolio. The following examples indicate the different incentives that might arise:

- If a retailer owns generation assets located in a constrained region and the generator can exercise market power, then the retailer/generator can benefit from high prices caused by a lack of reliability that results in transmission congestion.
- A retailer contracting with a generator located in the same region as its customers may have little concern about transmission performance.
- A retailer that is trading across a constrained part of the transmission grid that is being affected by grid performance issues may be very concerned with transmission performance.

Free riding and coordination problems

There are typically several retailers at a grid exit point. Because the grid is a common user facility, any action by one retailer (for example, to improve the physical management of transmission assets through enforcing compliance with performance standards in the transmission agreement) will tend to affect equally all retailers that are in a similar market position.

Thus, there is the potential for free riding (if one retailer enforces compliance, its competitors may benefit). This is likely to reduce the incentives for holding Transpower accountable.

Further, if there are different interests amongst retailers (due to different generation positions, locational or retail portfolios) then this is likely to make it difficult for retailers to coordinate with each other.

Exposure to transmission performance

Retailers have no long-term exposure (under current regulatory and pricing arrangements) - they pass through transmission charges to end use customers. Retailers' incentives relate to current (usually short term) contracts with end users. However, efficiency in transmission is affected by both short and long term factors.

High degree of information asymmetry

The technical features of transmission grids are complex. Several factors affect network capability and performance. Events in one part of network often affect capability and performance in other parts. Transpower as asset owner and system operator can control some - but not all - of these factors. Thus, it will be complex and difficult to develop meaningful service measures, and standards or incentives that adequately account for all these factors. Negotiating with Transpower will require strong technical knowledge.

International experience indicates that retailers are likely to find it difficult in practice to overcome these information asymmetry problems.

6.3 Analysis and findings

Our detailed analysis of the options against each of the potential regulatory and economic impact categories is set out below.

6.3.1 Potential positive impact/benefit

1. Efficient grid investment

Potential benefits are:

- **The extent to which an option generates valuable information from industry participants additional to the base case; and**
- **The nature and magnitude of the benefits that information can be expected to create over and above the base case.**

The incentives on parties to contribute actively to the Commission's consultation and decision-making on grid investments will be affected by the extent to which the parties:

- are financially affected by the outcome
- have access to information and capability, and/or
- consider their input is likely to affect the decisions.

We assess that all stakeholders are likely to have access to information necessary to provide analysis and input to the Commission, regardless of their contract status. Input from stakeholders confirms this view.

Incentives to contribute are strongly affected by the extent to which a decision exposes a party to increased costs or risks that cannot ultimately be passed through to end use customers. In our view, the current regulatory and pricing arrangements mean that no downstream party has a significant long-term exposure, since both retail and lines companies can over time effectively pass through transmission charges to end use customers.

While there may be short term effects (for example, a proposed increase transmission prices) that may generate a short term interest in the efficiency of investment, it seems unlikely that this would persist in the long term. Nor would this interest necessarily emerge at the time that important decisions were being made.

As a result, we conclude that the decisions on contract structure and counterparties *per se* do not materially affect long term incentives to participate in debates to promote efficient investment.

We note that a number of parties initially considered that retailers/generators would have stronger incentives to provide valuable information if they were the counterparties to Transpower, though some views changed during discussions to accept the above conclusion.

This assessment could change if there were commercial or regulatory decisions to reallocate risk away from customers, with the aim of

strengthening incentives. For example, if a retailer were required by regulation to offer customers a 10 year fixed priced transmission component, it would have a strong interest in reducing or better managing the component input costs. A retailer also could conceivably take on risk voluntarily to achieve a marketing benefit.

Our review of the international literature did not identify instances where such commercial or regulatory decisions have been adopted. Such a regulatory initiative would be difficult and complex. Accordingly, it is not considered in our analysis.

We conclude that, relative to the base case:

- Option 2 is identical to the base case and does not necessarily give rise to significant grid investment efficiency benefits, and
- Option 3 is unlikely to give rise to significant grid investment efficiency benefits, (unless there are regulatory interventions that aim to reallocate risk from customers to retailers).

2. Holding Transpower accountable for delivering against planned reliability standards

A potential benefit is the extent to which an option increases the probability that Transpower (through contractual monitoring and enforcement rights) will undertake the planned investments, and maintain and manage the grid to deliver the planned grid reliability standards.

The Commission will set common grid reliability standards, and proposed grid investments will be considered and approved by the Commission to enable Transpower to meet those standards.

However, the regulatory framework does not “obligate” Transpower to deliver the grid reliability standards, nor to undertake the approved investments. It is possible that the transmission contracts will be the only direct mechanism for enforcing these obligations, with only counterparties able to enforce them.

We assess that Transpower’s incentives and obligations for delivering investment, and for behaviour related to grid management and maintenance to meet grid reliability standards arise through a combination of:

- The Commerce Commission threshold regime which, in theory at least, provides incentives for Transpower not to breach the reliability thresholds
- Statutory obligations

- Undertakings of the Transpower Board to the Shareholding Minister as set out in the Statement of Corporate Intent
- Contractual obligations to deliver Part F Transmission services (the subject of this paper)
- Any obligations to deliver Part C services.

The extent to which the Part F transmission agreements affect Transpower's behaviour in relation to investment, maintenance and management to meet grid reliability standards depends on:

- The detailed terms of the agreement (for example, do they lock in a requirement for grid investment or for "grid reliability standards", and what penalties and damages are established for "non-performance"?)
- Whether contractual penalties and remedies are sufficiently large to incentivise Transpower to avoid breach and deliver rather than incur the costs of dispute. To be effective, the remedies and penalties would have to be sufficiently large to incentivise Transpower to change its behaviour *in prospect*.
- The relative "strength" of this incentive compared to the other pressures.
- Whether meaningful performance measures can be defined, quantified and monitored against, such that non-performance is identified and the cause of non-performance can be unambiguously attributed to the contract breach.

The terms of the benchmark agreements have not yet been determined by the Commission. However, Part F stipulates that the benchmark agreements must be "consistent in all material respects with the grid reliability standards" (see Section II, rule 4.3.2). The grid reliability standards themselves are to include regional reliability standards that reflect differing needs in regions supplied by the grid. No decision has been made yet whether the grid reliability standards will be output related, or determinative.

There is no express reference to investment obligations, though the contracting parties must design, construct, maintain and operate relevant plant and equipment in accordance with relevant laws, the Rules, good electricity industry practice, and applicable technical and safety standards.

Conceivably, the benchmark agreements may include an obligation on Transpower to meet the grid reliability standards.

In relation to grid investment, unless a transmission agreement expressly provides for information to flow to the counterparty on the investment program and delivery outcomes, we consider it is likely to be difficult for

the counterparty to monitor the investment programme, particularly at a disaggregated regional level.

In theory, it may be possible to specify grid reliability performance measures that can be monitored and reported against such that non-performance (and the rationale for that non-performance) can then be identified to the contract counterparty. In our assessment, based on experience elsewhere and similar problems in other jurisdictions, this is impracticable. However, if possible, there is a potential benefit that such measures could be incorporated in the transmission agreement together with appropriate remedies and penalties that are sufficiently meaningful to the counterparties.

The relative benefits of the options then depends on the extent to which a counterparty has the capability, information and incentives to apply the contract in relation to grid reliability standards.

- **Capability and information**

The assessment in relation to capability and information of parties depends on assumptions about the ease of developing and reporting performance measures required, unambiguously assessing grid reliability performance, and determining whether any apparent non-performance was in fact due to a breach of contract.

To analyse this issue, it is necessary to consider the factors that may underpin a real or perceived grid performance failure. These could include:

- the approved investments do not deliver the grid reliability standards expected
- approved investments are not made, or not made in a timely manner
- poor maintenance or performance
- system operational issues and decisions (possibly outside Part F)
- operational or management failure, and/ or
- external events, such as force majeure, or unusual demand and supply patterns.

To the extent “simple” measures could be defined and Transpower was obliged to report against these, including the cause of problems, then all counterparties would potentially be able to receive this information and act on it.

However, we assess that it will be very difficult to define grid reliability standards and performance measures that enable unambiguous and

timely monitoring of performance against standards. Accordingly, we consider that there is likely to be a high degree of information asymmetry, and that information required is likely to be of a technical nature. We consider that connected parties are more likely to have access to this information and knowledge.

Therefore, we assess that connected parties are more appropriate counterparties in terms of information and capability.

- Incentives

In relation to incentives, we consider that the incentives of counterparties to take action depend on the cost of taking action and the costs incurred directly or indirectly as a result of the non-performance.

Grid performance can significantly affect energy prices. Therefore, depending on the nature of retail contracts with customers, there is the potential for retailers to incur significant costs. However, the relative cost or benefit to any one retailer depends on their generation position and on their overall retail portfolio. The costs incurred are likely to be short term and regional in nature.

Grid performance can also give rise to load shedding. This can give rise to costs/lost revenue for the retailer, distributor and customers. Customers may suffer losses that could give rise to contractual remedies, depending on the terms of their agreements. These costs are also short term and regional in nature.

In the medium term, grid performance affects the management and maintenance of the distribution system and the distribution investment requirements. We understand that these effects are most likely to be significant where network capacity is constrained/under pressure in a location and there is a close relationship between distribution and transmission network management.

Incentives are also affected by 'free-rider' issues. There may be several retailers at each transmission connection point, and they will tend to have different interests, size, and customer profiles such that the materiality of consequences of Transpower contract breaches will differ amongst them. If one retailer pursues Transpower successfully, then others will benefit. This give rise to the problem of free riding; with retailers holding back in the hope that others will take (and pay for) enforcement action. In contrast, a distributor can be obliged (under regulation or contract) to pass on any legitimate material concerns of its distribution customers (i.e. retailers), and can be enabled to recover associated costs across all its customers.

We conclude that:

Depending on the detailed terms and conditions of the transmission agreements, if grid reliability and security measures:

- Can be unambiguously defined, monitored and reported against, both retailers and distributors could have the information and capability to enforce the contract and affect Transpower's delivery of grid reliability standards.
- Can be defined, but those measures will require interpretation, distributors are more likely to have the information and capability to enforce the contract and affect Transpower's delivery of grid reliability standards.
- Cannot be readily defined in terms that are meaningful and enforceable (which we expect), neither party will have the information and capability to enforce the contract and affect Transpower's delivery of grid reliability standards.

Both retailers and distributors face financial and commercial incentives to enforce the contract and to ensure Transpower delivers on grid reliability standards.

- We consider that retailers can face short-term significant costs, but the net cost to a given retailer depends on its degree of vertical integration with generation, its overall hedging position, its retail customer contracts and regional portfolio.
- Distributors are incentivised to ensure performance over the medium and longer term, particularly in relation to regional and connection assets.

Hence, Option 2 is neutral compared with the base case.

Option 3 may provide short term incentives, but will not deliver optimal outcomes in the long term.

3. Efficient grid management decisions

A potential benefit is the extent to which an option facilitates more economically efficient grid management decisions

Ideally, "economically efficient" grid management decisions should take account of all associated costs and benefits including downstream costs and benefits. Because this is complicated and difficult to achieve without strong coordination (including with all affected parties), we have considered the potential incremental benefits associated with the retailer being involved in this decision versus the distribution lines company.

From a technical perspective, coordination is facilitated by the distributor being the prime party involved in this decision, taking account of the distribution system management implications.

Where transmission system management decisions have material impacts downstream, then depending on the nature and structure of retail contracts, it can be argued that retailers may be more likely to represent the needs of customers and take account of the associated customer costs. However, we consider these potential benefits are complicated by:

- free riding (see comments in relation to Benefit 2 above)
- the need for co-ordination at grid exit points
- the vertical integration of generators and retailers.

These complications are likely to distort retailer incentives such that perceived benefits may be illusory.

We conclude that:

- Option 2 is identical to the base case.
- Option 3 has technical detriments.

<p>4. Optimisation of distribution/transmission investment and management A potential benefit is the extent to which an option facilitates optimisation of distribution/transmission investment and management decisions</p>
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We consider that optimisation of the distribution/transmission interface requires close interaction between the connected parties and potentially coordination of service delivery and investment. Hence, optimal decisions are more likely if the connected parties consider the investment requirements in the context of their respective overall system investment; and where the distributor is the downstream counterparty. However we note that:

- Our assessment assumes that the detailed framework for economic regulation (and application of this framework) does not favour transmission investment over distribution investment (or vice versa).
- If a physical connection agreement between Transpower and the distributor includes rights, obligations and material payments for associated services, then the potential 'loss of optimisation' from the retailer as counterparty for use of system may be mitigated.

We conclude that:

- Option 2 is identical to the base case and should deliver optimal interface investment and management decisions (subject to the details of agreements).
- Option 3 could reduce the potential for optimisation of the distribution/transmission interface investment and management decisions. Our ballpark estimate is that the “cost” of “non-optimisation” could be around \$25M (being 5% of a notional future investment of say \$500M in connection assets).

5. Economic transmission alternatives facilitated

A potential benefit is the extent to which an option facilitates economic transmission alternatives

We assess that the economics of transmission alternatives will be determined largely through the pricing methodology and through possible resolution of contractual and other issues by the Commission.²⁷

In line with the comments noted in Table 7 (section 6.2.1) we do not consider the choice of contract structure and counterparties *per se* affects the extent to which economic transmission alternatives are facilitated.

We therefore conclude all options are neutral to this potential impact.

6. Increased retail competition

A potential benefit is the extent to which an option facilitates increased retail competition

We assess that new obligations and roles for retailers could reduce the attractiveness of the retail market to new entrants because of the increased “cost” of entry.

Accordingly, we conclude that:

- Option 2 and the base case are neutral - both have the potential to facilitate increased retail competition.
- Option 3 could potentially decrease retail competition (relative to the base case).

²⁷ These issues are discussed in the Ministry of Economic Development *Part F Transport Rules: Explanation of Decisions and Response to Submissions*, 18 March 2004

7. Industry development facilitated

A potential benefit is the extent to which an option facilitates (or does not preclude) industry development

We assess that disaggregation of contracts could provide greater transparency which may assist industry development. However, we also recognise that similar benefits could be achieved through development of agreements that are structured transparently so that they comprise “readily separable components”, whether through separate sections or schedules for particular categories of services and/or customers. Given the high level nature of contract structures and counterparty decisions considered in this study, we do not consider that any option greatly precludes or assists industry evolution.

The process of implementing Options 2 or 3 could produce benefits insofar as useful insights are gained in distinguishing between services associated with ‘connection’ and ‘use of system’. However, the same benefit could be achieved by creating different sections within a single unified contract (the base case). New skills or capabilities acquired by retailers for Option 3 are likely to introduce new tensions into the industry. Combined with other decisions (such as one to introduce retail price offering requirements), the option could significantly affect industry dynamics. However, we cannot determine whether such a direction is consistent with the Commission’s overall approach.

Accordingly, we consider that, for the purposes of this decision, the options are neutral.

6.3.2 Potential negative impact/ costs

1. Transition costs

A potential cost is the extent to which an option involves additional transition costs

As Option 2 requires two agreements, rather than the single unified agreement in the base case, there may be marginal additional costs associated with implementation of Option 2. However, we do not consider these likely to be significant.

Option 3 will require systems changes and new information flows. The option also involves new retail counterparties. Our ballpark estimate is that the system and information costs associated with introducing this option are in the order of \$10 to \$20M.

2. Delayed grid investment

A potential cost is the extent to which an option delays grid investment notwithstanding the transitional powers.

Given the transitional investment approval powers of the Commission, we consider that no significant costs associated from delayed grid investment should arise from Options 2 or 3.

3. Ongoing transaction costs

A potential cost is the extent to which an option involves additional transaction costs

Any new arrangements may give rise to new ongoing transactional costs.

We assess that Option 2, with the same counterparties, should not give rise to any significant additional transaction costs.

Our ballpark estimate of the transaction costs associated with Option 3 assumes that implementation could require additional resources of, say, 1 person per stand-alone retailer, and 0.5 people per integrated generation/retailer. In addition, Transpower would be required to manage some new relationships with retailers.

In aggregate, we estimate that the additional costs associated with these resources are of the order of \$1M per annum or a net impact of \$10M. (based on a factor of 10 to convert from annual cost to NPV).

Option 3 could give rise to costs of around \$10M.

4. Prudential risks and credit costs

A potential cost is therefore the extent to which an option involves additional prudential risks or credit costs

We assess that costs associated with Option 2 should not differ significantly from the base case (noting that both may be affected by other decisions, including the pricing methodology).

We consider that while the costs associated with Option 3 should not differ in principle (costs should move with counterparties), in practice they may increase slightly. However, this is unlikely to be a significant long-term additional cost. Moreover, any non-alignment of costs and risks that results from regulatory arrangements or downstream contracts is best addressed in the regulatory or contractual arrangements that give rise to the problem.

We conclude that all options are neutral to this potential impact.

5. Retail price impacts (particularly small customers)

A potential cost is therefore the extent to which an option could involve additional retail price impacts

The retail price impacts associated with Option 2 are no different from those associated with the base case.

Option 3 could involve additional retail price impacts for regions where distribution lines businesses currently undertake ICP pricing or variabilise prices to retailers. In these situations, unless Transpower billed on an ICP basis (considered unlikely), current pricing could produce retail price impacts. Such issues may be considered in approving the transmission pricing methodology. There may also be other more targeted regulatory mechanisms for mitigating any such retail price impacts.

We therefore we consider that:

- Option 2 is neutral.
- Option 3 has potential negative impacts.

However, we consider that the impact from contract counterparty changes could be insignificant compared with potential impacts from pricing methodology changes, and that other more targeted regulatory options exist to mitigate any retail price impacts.

6.4 Summary table of assessment

Table 8 below summarises our findings, setting out the outcome of our assessment of Options 2 and 3 relative to the Base Case.

Table 8 - Summary of assessments for Options 2 & 3

Impact		Option 2	Option 3
Potential Positive Impact/Benefit			
1	Efficient grid investment <ul style="list-style-type: none"> ▪ The extent to which an option generates valuable information from industry participants additional to the base case; and ▪ The nature and magnitude of the benefits that information can be expected to create over and above the base case 	Neutral (i.e. identical to base case)	No material benefits
2	Transpower held accountable for delivering grid reliability standards The extent to which an option increases the probability that Transpower (through contractual monitoring and enforcement rights) will undertake the planned investments, and maintain and	Neutral	No material benefits

Impact		Option 2	Option 3
	manage the grid to deliver the planned grid reliability standards.		
3	Efficiency of grid management decisions The extent to which an option facilitates economically efficient grid management decisions.	Neutral	Potential detriments (unquantified)
4	Optimisation of distribution/transmission investment and management The extent to which an option facilitates optimisation of distribution/transmission investment and management decisions	Neutral	Potential detriments (Ballpark estimate \$25M)
5	Economic transmission alternatives facilitated The extent to which an option facilitates economic transmission alternatives	Neutral	Neutral
6	Increased retail competition The extent to which an option facilitates increased retail competition	Neutral	Potential detriments (unquantified)
7	Industry development facilitated The extent to which an option facilitates (or does not preclude) industry development	Neutral	Neutral

Potential Negative Impacts/Costs		Option 2	Option 3
1	Transition costs The extent to which an option involves additional transition costs	Marginal cost increase (multiple agreements)	Potential detriments (Ballpark estimate \$10 - \$20M)
2	Delayed grid investment The extent to which an option delays grid investment notwithstanding the transitional powers.	Neutral	Neutral
3	Ongoing transaction costs The extent to which an option involves additional transaction costs	Negligible	Potential detriments (Ballpark estimate \$10M)
4	Prudential risks and credit costs The extent to which an option involves additional prudential risks or credit costs	No material costs	No material long term costs
5	Retail price impacts (particularly small customers) The extent to which an option could involve additional retail price impacts	Neutral	Negligible

As summarised in Table 8 above, Option 2 is very similar to Option 1 but would involve marginal additional transition costs due to the need to develop multiple agreements. Thus Option 1 is preferred to Option 2. However this preference is not strong.

Option 3 could involve material transition costs and ongoing transactions costs, based on our ballpark cost assessments. There appear to be no material benefits for efficiency and some potential losses of technical efficiency. However we acknowledge that this assessment is complex because it depends on a range of assumptions regarding participants' behaviours and risk allocations. This assessment should be tested through consultation.

In conclusion, we find that the net social benefit would be maximised by Option 1.

6.5 Recommendation

The net social benefit will be maximised by retaining a single contract structure, with counterparties (designated transmission customers) to be the physically connected parties. In terms of the decisions required under Section II of the rules, we recommend that the Commission propose as follows:

- There should be a single contract for connection and use of system.
 - However, in developing the benchmark agreement, the Commission may elect to create sections or categories of services that apply to different counterparties within a single unified agreement.
- The appropriate categories of participants to be designated transmission customers (each of which is required to enter a separate transmission agreement with Transpower) are:
 - generators
 - distributors
 - consumers with a point of connection to the grid.

6.6 Other findings

The analysis highlights the following important points about the context for regulated transmission agreements, and the recommendation above:

- There are limitations on the ability of regulated transmission agreements to deal effectively with all matters of legitimate concern to retailers and end use customers, and in particular, to ensure Transpower takes into account of the market impact in the manner in which it manages the grid.
- The 'suite' of tools to address transmission service and performance issues is not limited to regulated transmission agreements, but includes:
 - commercial agreements between Transpower and others (including parties other than designated transmission customers)
 - instruments to be developed by the Electricity Commission (such as the benchmark agreements, grid reliability standards, grid investment test, and grid upgrade plans),
 - the thresholds regime administered by the Commerce Commission, and any future development of a performance-based incentive regime.