18 November 2002

The Registrar
Business Acquisitions and Authorisations
Commerce Commission
PO Box 2351
WELLINGTON

Pursuant to section 66(1) of the Commerce Act 1986, notice is hereby given seeking **clearance** of a proposed business acquisition.

REGISTRATION DETAILS

Registration Number/Date	Transferee/Transferor	File Number

Public Version

CONTENTS

EXECUTIVE SUMMARY

Proposal

1. Contact Energy Limited seeks clearance for a proposal ("Proposal") to acquire from Natural Gas Corporation Holdings Limited ("NGC"):

    - all the shares in Stratford Power Limited, which owns Taranaki Combined Cycle power station ("TCC") and the associated hedge book; and

    - all the shares in Cobb Power Limited, which owns Cobb Hydroelectric power station ("Cobb").

2. Contact submits that the relevant markets which must be examined are the wholesale market, and the ancillary services market.

Retail growth

3. [ ]

Physical generation better than contracts

4. Contact could contract with other generators for this supply. However, it is preferable for Contact to own the additional supply itself because:

    - there are large transaction costs associated with writing and entering into hedge contracts;

    - ownership of generation capacity provides Contact with "real options" that cannot be provided by hedge contracts. For example, the option to supply itself over an extended period of time, compared to a hedge contract with the standard 3 year term carrying no right of renewal;

    - hedge contracts do not provide any flexibility on the downside so that, for example, if spot prices fall below the hedge price, the loss to the hedge purchaser is fixed; and

    - physical generation has the ability to be shaped to meet portfolio demands more efficiently in real time.

Specific nature of the power stations

5. TCC is based on first generation design that has not proved to be as reliable as modern CCGT plants that use proven technology. TCC presently constitutes a substantial portion of NGC's generation

portfolio. Failure of TCC leaves NGC highly exposed to the spot market to fulfil its hedge contracts based on generation at TCC.

6. NGC's ability to write hedge contracts has also been limited, and hedge contracts that have been written have included onerous force majeure clauses, because of the nature of TCC.

7. Contact, with its larger generation portfolio, can better manage the risk specifically associated with TCC.

8. In Contact's view it is unlikely that TCC and Cobb would provide a good market entry point for a new competitor. This is because the plant risk of TCC is too difficult to manage without a diverse portfolio, and the technology choice is unattractive for a new entrant. Cobb is not well located for a new entrant.

9. On the other hand, the acquisition of TCC and Cobb by Contact would allow Contact to maintain the retail base, maximise TCC's hedge availability, improve fuel efficiency, and reduce greenhouse gas emissions. [ ]

Co-ordinated or unilateral market power

10. Contact considers that the Proposal will not increase the likelihood of co-ordinated market power or unilateral market power being exercised. This is because:

- Contact is most fully hedged at times of peak demand, which means that Contact lacks the incentive to try to game the market;
- Contact's generation plants rarely set the price. That is to say, no Contact owned plant generally operates as the marginal station;
- Contact's competitors and their generation plants are differentiated in terms of costs and fuel sources to such an extent that it would be difficult to agree to or enforce a collusive arrangement;
- bidding and offering is complex and multi dimensional, and competitors lack knowledge of each others hedge positions/bidding strategies;
- the relevant markets are characterised by uncertainty, for example, in respect of hydrology, which will affect different market participants in different ways and make it difficult to enforce or detect deviation from a collusive arrangement; and
- Contact's competitors have the ability to expand capacity to respond to an attempt by Contact to exercise any market power.

Conclusion

11. In conclusion, Contact submits that the proposal would not substantially lessen competition in the relevant markets.

PART I: TRANSACTION DETAILS

1. **Business acquisition for which clearance is sought**

1.1 The business acquisition for which clearance is sought is a proposal ("Proposal") by Contact Energy Limited ("Contact") to acquire from Natural Gas Corporation Holdings Limited ("NGC"):

1.1.1 all the shares in Stratford Power Limited ("SPL"), which owns Taranaki Combined Cycle power station ("TCC"); and

1.1.2 the hedge book associated with TCC; and

1.1.3 all the shares in Cobb Power Limited ("CPL"), which owns Cobb Hydroelectric power station ("Cobb"),

(TCC and Cobb together being "the Power Stations").

1.2 SPL and CPL are wholly owned subsidiaries of NGC. In this application, SPL and CPL are collectively referred to as NGC, unless otherwise specified.

1.3 The Proposal has not been announced to the public. Any agreement between the parties will be conditional on Contact obtaining clearance from the Commission for the Proposal.

1.4 This notice seeks clearance of the Proposal.

PERSON GIVING NOTICE

2. **The person giving notice**

2.1 This notice is given by:

Contact Energy Limited
Level 1
Harbour City Tower
29 Brandon Street
PO Box 10742
Wellington

Attention: Stephen Cross
Telephone: 0-4 499 4001
Facsimile: 0-4 499 4700

Correspondence and inquiries should in the first instance be addressed to:

Buddle Findlay
Law Offices
State Insurance Tower
BNZ Centre
1 Willis Street
PO Box 2694
DX SP20201
Wellington

Attention: Tony Dellow
Telephone: 0-4 498 7304
Facsimile: 0-4 462 0484
Email: tony.dellow@buddlefindlay.com

CONFIDENTIALITY

3. **Requests for confidentiality**

3.1 Contact does not request a confidentiality order for the fact of the proposed acquisition.

3.2 Confidentiality for specific information requested:

3.2.1 Contact seeks confidentiality for specific information in this application included in square brackets and highlighted. A copy of this notice with the confidential information deleted is provided to assist the Commission.

3.2.2 Contact requests that the Commission make a confidentiality order under section 100 of the Commerce Act 1986 in respect of this information.

3.2.3 Contact also requests that, on the expiry of any confidentiality order that the Commission makes, the information continues to be withheld under section 9 of the Official Information Act 1982. Contact also requests that it be notified of any request made under the Official Information Act 1982 for the information, and be given the opportunity to be consulted as to whether the information remains commercially sensitive at the time that the request is made.

3.2.4 These requests for confidentiality are made because the information is commercially sensitive and disclosure would be likely to unreasonably prejudice the commercial position of Contact or NGC.

DETAILS OF THE PARTICIPANTS

4. **The participants**

4.1 The acquirer is:

Contact Energy Limited. Contact's address and contact details are set out in paragraph 2 above.

4.2 The proposed transferor is:

Natural Gas Corporation Holdings Limited
Western Entrance
10 Hutt Road
Petone
Private Bag 39-980
Wellington Mail Centre
Wellington

Correspondence and inquiries should in the first instance be addressed to:

JB Were (NZ) Limited
Level 38
Royal & SunAlliance Centre
48 Shortland Street
PO Box 887
Auckland

Attention: David Cameron Brown/Mark Green
Telephone: 0-9-980 1363/0-9-980 1329
Facsimile: 0-9-357 3222

5. **Interconnected or associated parties**

5.1 Contact

5.1.1 Members of the Contact Energy group:

Clutha Pipeline Company Limited
Contact Energy Limited
Contact Otahahu B Limited
Contact Otahuhu B1 Limited
Contact Otahuhu B2 Limited

Contact Otahuhu B3 Limited
Contact Peaker (NZ) Limited
EME BV Precision
Empower Limited
Evolution E-Business Limited
Mission Contact Finance Limited
Mission Energy Five Star Holdings
Mission Energy Pacific Holdings
Mission Energy Universal Holdings

5.1.2 Companies in which Contact and its interconnected bodies corporate own 10 %or more of the shares:

Contact owns 10% or more of the shares of:

Contact Otahahu B Limited
Contact Otahuhu B1 Limited
Contact Otahuhu B2 Limited
Contact Otahuhu B3 Limited
Contact Peaker (NZ) Limited
Empower Limited
Evolution E-Business Limited
Clutha Pipeline Company Limited

EME BV Precision owns 10% or more of the shares of:

Mission Energy Universal Holdings

Mission Energy Universal Holdings owns 10% or more of the shares of:

Mission Contact Finance Limited
Mission Energy Five Star Holdings
Mission Energy Pacific Holdings

Mission Contact Finance Limited owns 10% or more of the shares of:

Mission Energy Pacific Holdings

5.1.3 Companies owning over 10% of the shares in Contact or any company of which Contact is a subsidiary

Companies owning over 10% of the shares of Contact:

Mission Energy Pacific Holdings

5.1.4 Interconnected bodies corporate of companies identified under paragraph 5.1.3 and all companies in which such a company, or its interconnected bodies corporate, own over 10% of the shares:

Interconnected bodies corporate of Mission Energy Pacific Holdings

Mission Energy Universal Holdings
EME BV Precision
Mission Contact Finance Limited

EME BV Precision owns 10% or more of the shares of:

Mission Energy Universal Holdings

Mission Energy Universal Holdings owns 10% or more of the shares of:

Mission Contact Finance Limited
Mission Energy Five Star Holdings
Mission Energy Pacific Holdings

Mission Contact Finance Limited owns 10% or more of the shares of:

Mission Energy Pacific Holdings

5.1.5 Edison International, a corporation based in the United States, is the ultimate owner of the EME/Mission Energy Group of companies.

5.2 NGC

5.2.1 Subsidiaries of NGC and all companies in which NGC or any subsidiary owns 10% or more of the shares:

NGC's subsidiaries are:

NGC Finance Limited
NGC Generation Holdings Limited (previously On Energy Limited)
NGC Limited
NGC Generation Limited
NGC Generation Operations Limited
Southdown Cogen Power Limited
Cobb Power Limited
Stratford Power Limited
NGC New Zealand Limited
NGC Gas Networks Limited
NGC Energy Limited
On Gas Limited
NGC Trading Limited
NGC Equities Limited
NGC Contracts Limited
NGC Metering Limited
NGC Waikato Limited
NGC Management Limited
NGC Nominees Limited

NGC Loans Limited
NGC Kapuni Limited

NGC owns 10% or more of the shares of:

NGC Finance Limited
NGC Generation Holdings Limited
NGC Limited

NGC's subsidiaries which own 10% or more of the shares in other companies are:

NGC Finance Limited owns 10% or more of the shares of:

Wanganui Gas Limited

NGC Generation Holdings Limited owns 10% or more of the shares of:

NGC Generation Limited
NGC Generation Operations Limited
Pacific Energy Limited

NGC Generation Limited owns 10% or more of the shares of:

Southdown Cogen Power Limited
Cobb Power Limited
Stratford Power Limited

Southdown Cogen Power Limited owns 10% or more of the shares of:

Southdown Cogeneration Limited

NGC Limited owns 10% or more of the shares of:

NGC New Zealand Limited
NGC Gas Networks Limited

NGC New Zealand Limited owns 10% or more of the shares of:

NGC Energy Limited
On Gas Limited
NGC Trading Limited
NGC Equities Limited
NGC Contracts Limited
NGC Metering Limited
NGC Waikato Limited
NGC Management Limited

NGC Trading Limited owns 10% or more of the shares of:

NGC Nominees Limited
NGC Loans Limited
Liquigas Limited

NGC Equities Limited owns 10% or more of the shares of:

NGC Kapuni Limited

(Source: The information in this section was obtained from the New Zealand Companies Office.)

5.2.2 Companies owning over 10% of the shares in NGC, who will continue to do so after the proposed acquisition, and all of the interconnected bodies corporate of that company and all companies in which it or its interconnected bodies corporate own over 10% of the shares.

AGL NZ Limited will own 10% or more of shares in NGC after the acquisition. AGL NZ Limited owns 10% or more of the shares of:

NGC Holdings Limited
AGL NZ Management Limited
AGL NZ Capital Limited
Tauranga Civic Holdings Limited
Trustpower Limited

All companies in which NGC's interconnected bodies corporate hold over 10% of the shares are:

NGC Holdings Limited owns 10% or more of shares of:

NGC Finance Limited
NGC Generation Holdings Limited
NGC Limited

Tauranga Civic Holdings Limited owns 10% or more of the shares of:

Anloe Holdings Limited

Anloe Holdings Limited owns 10% or more of the shares of:

Aspen Properties Limited

NGC Finance Limited owns 10% or more of the shares of:

Wanganui Gas Limited

NGC Generation *Holdings Limited owns 10% or more of the shares of:*

NGC Generation Limited
NGC Generation Operations Limited
Pacific Energy Limited

NGC Generation Limited owns 10% or more of the shares of:

Southdown Cogen Power Limited
Cobb Power Limited
Stratford Power Limited

Southdown Cogen Power Limited owns 10% or more of the shares of:

Southdown Cogeneration Limited

NGC Limited owns 10% or more of the shares of:

NGC New Zealand Limited

NGC New Zealand Limited owns 10% or more of the shares of:

NGC Energy Limited
NGC Generation Holdings Limited
NGC Trading Limited
NGC Equities Limited
NGC Contracts Limited
NGC Metering Limited
NGC Waikato Limited
NGC Management Limited

NGC Trading Limited owns 10% or more of the shares of:

NGC Nominees Limited
NGC Loans Limited
Liquigas Limited

NGC Equities Limited owns 10% or more of the shares of:

NGC Kapuni Limited

Trustpower Limited owns 10% or more of the shares of:

Waikaremoana Power Limited
Methven Management 1997 Limited
Paehinahia Mairea Geothermal Limited
POS Power Limited
Trustpower Australia (New Zealand) Limited
Bay Energy Limited
Taheke Geothermal Limited
Kaimai Windpower Limited

(Source: The information in this section was obtained from the New Zealand Companies Office.)

6. **Participants' interests in each other**

6.1 No participant, and no interconnected body corporate of any participant, already has a beneficial interest in, or is beneficially entitled to, any shares or other pecuniary interest in another participant.

7. **Links between participants**

7.1 Contact currently on-sells some of its Maui entitlement to Energy Gas Contracts Limited ("EGCL"), which then on-sells the gas to SPL.

7.2 Contact and NGC are both members of the New Zealand Electricity Market ("NZEM") and are parties to the Metering and Reconciliation Information Agreement ("MARIA").

7.3 Contact and a wholly owned subsidiary of NGC are party to a hedge contract. The contract expires on 31 March 2003.

7.4 Contact is a party to various gas transmission and distribution agreements with NGC.

7.5 Contact and NGC are joint sponsors of the Karori Wildlife Sanctuary.

8. **Directors**

8.1 Tim Saunders is a director of both Contact and Solid Energy Limited.

8.2 No other director of Contact also holds directorships in any other companies which are involved in markets in which the Power Stations operate.

9. **Business activities of each participant**

9.1 Contact

Contact is the only one of the four main electricity generator/retailers that is not owned by the government. The business activities of Contact are:

9.1.1 *Electricity Generation:* Contact owns 9 power stations in New Zealand. These power stations generate electricity using water, steam and gas, or a combination of these.

9.1.2 *Electricity Wholesaling:* Contact is an active participant in the electricity wholesaling market, selling electricity on the spot market and participating in the reserves and hedge markets.

9.1.3 *Electricity Retailing:* Contact is a retailer of electricity in both the North Island and the South Island. Contact is the incumbent electricity retailer in the Far North, Counties, Eastland, Hawkes Bay, Kapiti-Horowhenua, Tasman, North Canterbury, South Canterbury, Dunedin, Invercargill and Southland.

9.1.4 *Gas Wholesaling:* Contact is a wholesaler of gas to large users such as other generators, large industrial users and petrochemical producers.

9.1.5 *Gas Retailing:* Contact is active in the retail gas market in New Zealand. Contact is the incumbent gas retailer in Auckland, Manawatu, Hawkes Bay and Wellington.

9.2 NGC

The business activities of NGC are:

9.2.1 *Natural Gas Transmission Operations:* NGC owns, operates and manages over 3,400 km of high pressure gas transmission pipelines and associated equipment in the North Island, supplying most major cities and large towns, as well as petroleum product pipelines owned by other companies. The high pressure gas transmission system currently consists of six main pipeline systems.

9.2.2 *Lower Pressure Gas Distribution Services*: NGC also owns and operates more than 2,500 km of intermediate, medium and low pressure gas distribution pipeline networks connected to the high pressure transmission system, located in over 30 towns and cities in the North Island.

9.2.3 *Gas Processing*: NGC owns and operates gas treatment, processing and conditioning facilities at Kapuni and sells LPG, natural gas and carbon dioxide produced at this plant.

9.2.4 *Gas Supply*: NGC holds long term entitlements to gas supply including approximately 27% of the reserves of the Maui field, New Zealand's largest known gas resource.

9.2.5 *Gas Wholesaling*: NGC wholesales approximately 60 PJ of gas per year to non-affiliated gas retailers, independent power producers, petrochemical producers, its own retail businesses and other uses.

9.2.6 *Gas Retailing*: NGC retails natural gas to industrial, residential and commercial customers in the North Island.

9.2.7 *Metering*: NGC provides independent electricity and gas metering services to over 800,000 homes and businesses.

9.2.8 *Electricity Generation*: NGC has interests in power generation assets with a total annual capacity of about 4,000 GWh, representing approximately 12% of New Zealand's demand (its share of this electricity generated is about 3,500 GWh or 9%). These generating assets consist of interests in four power generation stations:

Taranaki Combined Cycle Station – 100%
Southdown Station – 50%
Cobb Hydro Station – 100%
Kapuni Cogeneration Plant – 50%

9.2.9 *LPG*: NGC supplies LPG to 190 BP service stations throughout New Zealand. Through the Kapuni gas treatment plant, its interests in Liquigas Limited (60.25%), Propane Gas Limited (100%), and Port-a-Gas (100%), it is involved in over 100,000 tonnes per annum of LPG sales and tolling volumes.

(Source: NGC website – www.natgas.co.nz)

REASONS FOR THE PROPOSAL AND INTENTIONS IN RESPECT OF THE ACQUIRED BUSINESS

10. **Contact's reasons and intentions in respect of the power stations**

Rapid Retail Growth

10.1 Contact has achieved rapid and substantial growth in its retail electricity sales and customer numbers over the past two financial years through vigorous marketing campaigns, for example, offering a $50 credit on switching to Contact and Flybuys points on bills.

10.2 [ ]

10.3 [ ]

10.4 [ ]

10.5 Contact could contract with other generators for this supply. However, for the reasons discussed below, it is more efficient for Contact to own the additional supply itself.

10.6 There are large transaction costs associated with writing hedge contracts in the relatively thin market for electricity hedges in New Zealand. For example, the "spanning" problems associated with the need to obtain new hedges that are precisely contiguous with expiring hedge contracts, and the breadth of the force majeure clauses in contracts offered by generators may impose substantial costs on Contact.

10.7 Ownership of generation capacity provides Contact with "real options" that cannot be provided by hedge contracts. Ownership of capacity provides Contact with the option to supply itself over an extended period of time, whereas a hedge contract normally carries no right of renewal beyond the standard term, which is usually no more than 3 years. Hedge contracts do not provide any flexibility on the downside. For example, if spot prices fall below the hedge price, the loss to the hedge purchaser is fixed.

10.8 In contrast, with ownership of generation, the decision can be made to switch off generation when the spot price falls below the short run marginal cost ("SRMC") of the plant. Physical generation can be configured to meet portfolio demands more efficiently in real time. A hedge contract does not provide this ability.

10.9 The acquisition of TCC will give Contact assured long-term access to an electricity supply at a predictable price, allowing long-term investment in growing Contact's retail customer base. The acquisition of TCC and Cobb would allow Contact to service its existing customers and continue to compete in the retail electricity market at lower cost than if it is required to purchase hedge contracts or to increase its exposure to the spot market.

10.10 Participation in the retail market also offers the following advantages:

- it provides a generator with an opportunity to provide differentiation in what is otherwise a homogenous commodity market; and
- it provides an opportunity to sell value added services.

10.11 Because Contact has made a strategic decision to participate actively in the retail market, the economics of retailing incentivise maintenance of and growth in customer numbers. Successful energy retailing requires economies of scale in order to spread substantial fixed costs associated with the supporting IT and billing infrastructure.

10.12 The above discussion illustrates the synergies between electricity generation and retailing. The converse of the above discussion is that a generator/retailer will seek to grow its retail customer base to match growth in its generation capacity. For example, if Contact was to rely purely on the spot market for sale of its electricity production, annual revenues and hence net profit could be subject to substantial intra-year volatility (both on the upside and downside). Retail customers provide greater revenue certainty – they effectively provide a hedge on price.

Risk Management

10.13 Electricity generators face business continuance risk associated with the potential for plant breakdown. The costs of managing this risk are high because the retail demand for electricity is relatively inelastic, at least in the short-term. This risk, and the costs of managing it, are higher where a generator has a small number of large generation facilities. The risk is reduced if generation is spread over a number of plants, reducing the impact on total generation of any individual plant outage.

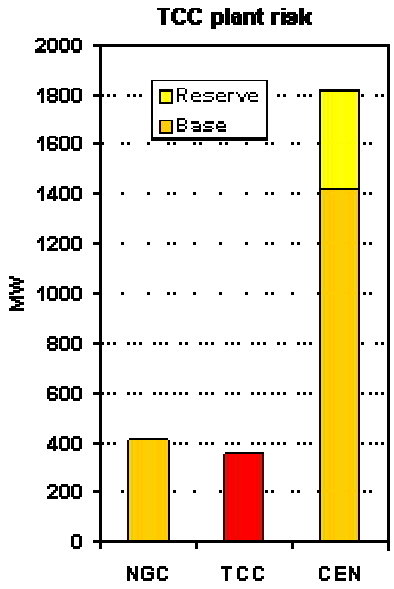
10.14 NGC is currently having difficulty managing the risk of TCC breaking down. This is because TCC constitutes a very high proportion of total NGC generation capacity (approximately 87%). Failure of TCC leaves NGC highly exposed to the spot market to fulfil its hedge contracts based on generation at TCC.

10.15 In turn, this limits NGC's ability to write hedge contracts, or at least forces it to write relatively onerous (to the customer) force majeure clauses.
[ ]

10.16 At present, Otahuhu B constitutes approximately 21% of Contact's generation capacity. An unplanned outage of Otahuhu B for an extended period (for example the outage during the period May 2000 to January 2001) can have a major adverse impact on Contact through exposure to spot prices.

10.17 During an outage at Otahuhu B, Contact's large Auckland customer base is exposed to prices north of known transmission constraints into Auckland. An outage at Otahuhu B increases the likelihood of a price de-coupling in the upper North Island.

10.18 [ ]



10.19 [ ]

10.20 [ ]

10.21 [ ]

[redacted]

Hedge Contracts

10.22 Because of reliability issues associated with TCC discussed above, and the nature of NGC's portfolio, NGC must write more restrictive force majeure clauses into its hedge contracts than if TCC was in Contact's ownership. This can significantly reduce the value of the hedge contracts offered by NGC.

10.23 In addition, greater supply security, and the portfolio effect of TCC being in Contact's ownership, will enable Contact to write less restrictive hedges than either Contact or NGC would currently write having regard to the present state of each party's portfolio.

Gas

10.24 Contact currently purchases gas from the Maui field under a take-or-pay contract, where the take-or-pay component is calculated on an annual basis and provides for "banking" of gas and the later recovery of prepaid gas. Contact currently sells some of this gas to EGCL. EGCL then on-sells the gas to SPL to fuel TCC. [redacted]

10.25 [redacted]

10.26 [redacted]

10.27 [redacted]

10.28 [redacted]

10.29 As an indication of this, electricity prices in Auckland averaged almost 8% more in the year ended 31 September 2002 than prices at Stratford ($42.35/MWhr vs $39.22/MWhr). The primary reason for this differential is transmission losses. In addition, the Otahuhu B Power Station has a thermal efficiency (LHV) of 57%, compared with a stated thermal efficiency for TCC of 55.6%. These factors suggest that it would be more efficient to use scarce fuel at Otahuhu B ahead of TCC.[1]

10.30 The potential loss in efficiency arises from transmission losses in transporting electricity out of Taranaki to demand centres, and from the different thermal efficiencies of TCC and Otahuhu B. Otahuhu B is better located with respect to transmission losses, given that Auckland is a large demand centre.

10.31 For the year ended 30 September 2002, Contact estimates that 230GWh of output was displaced from Otahuhu B to TCC. This amounts to 170,000GJ of gas (the equivalent of approximate annual demand of 5,500 homes) and an increase in CO_2 emissions by 9,000 tonnes.

Cobb

10.32 Contact is presently the incumbent retailer in the Tasman region, and is a net retailer in that region. Outages on circuits and transformers into and around the Tasman region can leave Contact's retail load exposed to high prices. The acquisition of Cobb will reduce Contact's net retail position by approximately half. However, even if Cobb is able to operate at peak output 32MW, (which Contact considers to be unlikely) Contact will remain a net retailer [ ].

10.33 The acquisition of Cobb means that Contact can reduce the effect of the transmission constraint affecting the Tasman region. In addition, Cobb will assist with meeting Contact's increasing retail demand in the Tasman region.

1 Gas transmission costs and losses are negligible.

PART II: IDENTIFICATION OF MARKET AFFECTED

HORIZONTAL AGGREGATION

11. **Markets in which there would be an aggregation of business activities**

Previous Decisions

11.1 In *Decision 340*, the last decision relating directly to this level of the electricity market, the Commission concluded that TransAlta's proposal to acquire a 40% share in Contact required an assessment of the competitive implications of the proposed transaction on the following markets:

- the national electricity generation and wholesaling market (comprising trading in bilateral contracts, spot electricity and reserves);
- the national electricity retail market;
- the North Island gas wholesale market; and
- two retail markets encompassing sales of gas to small consumers in specific regions.

11.2 In *Decision 340*, the acquisition related to a 40% share of all of Contact. In contrast, the Proposal essentially relates only to the Power Stations. Accordingly, for the purposes of this application, Contact submits that only the first market listed in *Decision 340* is relevant.

11.3 In *Decision 369* and *Decision 473* the Commission separated reserves out into an ancillary services market. Generation and wholesaling remained part of the same market, called the wholesale market.

11.4 The wholesale market and reserves are considered separately below.

Geographic dimension –Wholesale market

11.5 In *Decision 340*, the following comments were made by the Commission (paragraph 68):

> *The market is considered to be a national one. Although wholesale prices vary between nodes, the generation and transmission network connections between them ensures that none individually can be considered to constitute a separate market. Similarly, North Island prices are typically higher than South Island prices by 3-10%, reflecting the energy losses in*

> *transmitting electricity from south to north. However, this does not indicate separate markets in each of the Islands.*

11.6 Contact agrees with the Commission's conclusion that the market is a national one but acknowledges that transmission constraints can temporarily divide the market. Contact is aware of claims that, for a small percentage of trading periods, one or more transmission constraints affect the merit order for dispatch of generation. For example, Transpower has reported that the Tokaanu-Whakamaru circuit was constrained for around 10% of trading periods over the 3 year period to October 2001.[2] The HVDC link and circuits in and leading south from Taranaki also appear to sometimes be constrained.

11.7 However, Contact considers that transmission constraints are temporary and unpredictable. Transpower is also showing a more active approach to alleviating constraints. For most of the time, electricity can flow freely around the country. It is Contact's submission that temporary and unpredictable transmission constraints are not sufficient to justify finding a regional, rather than national, wholesale electricity market.

11.8 This conclusion is supported by analysis of regional price variation carried out for Contact by Trowbridge Consulting. Trowbridge found that price movements across key New Zealand nodes are highly correlated.[3]

11.9 Apart from withholding capacity, it is sometimes claimed that generators can exercise market power by overproducing on some units to create transmission constraints, in order to profit from high prices for the output of other units. For example, in *Decision 340*, the Commission stated (paragraph 138):

> *One line of reasoning suggests that a merged TransAlta and Contact could expand output from TCC and New Plymouth, putting pressure on the central North Island transmission line supplying the Auckland load centre and excluding Hydro Energy. To alleviate that pressure, and restore reactive power (volts), a power station close to the load centre might have to be dispatched even though it offered a high bid price. Otahuhu B is a likely candidate, providing it bid below Huntly. Moreover, in summer Huntly might be constrained by its thermal restraint related to the Waikato River. Modelling by LECG, on behalf of Hydro Energy, suggests, however, that* ***this ploy would likely be undermined by the competitive reactions of Genesis***

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2 Transpower New Zealand Limited, "Supplementary submission to the post-winter review of the New Zealand electricity system", October 2001

3 The one exception was TUI on the East Coast. The cause appears to have been transmission outages during 2000, which caused significant price separation.

> ***Power and Waikato SOE.*** *It should also be noted that Transpower has undertaken investments which partially alleviate capacity constraints to Auckland.*
>
> *[Emphasis added]*

11.10 Contact agrees with the Commission's conclusion. Contact's large retail customer base in the Auckland region also lowers the incentive on Contact to act to cause the wholesale price to rise, even if it had the ability to do so.

Reserves

11.11 As a result of the Proposal, Contact will remain a large net buyer of reserves. Contact considers that the Proposal will not have the effect of substantially lessening competition in the part of the ancillary services market consisting of reserves for the reasons discussed below.

11.12 As the Commission is aware, in order to maintain the flow of power on the national grid, demand and supply need to be in constant equilibrium.

11.13 Transpower achieves this by procuring enough instantaneous reserve energy ("reserves") from generators ("spinning reserve") and retailers/lines companies ("interruptible load") to cover the loss of the largest generating plant or transmission circuit in each island. This loss is commonly referred to as the "Risk" or the "Contingent Event".

11.14 Given that there are different "Risks" in each island, separate reserve prices are determined for each island. Compared with the North Island, the South Island is of minor interest. This is because the total generation in the South Island significantly exceeds the total load. It follows that the demand for reserve in the South Island is insignificant.

11.15 In the North Island the Risk is defined as the larger of:

- Otahuhu B's output; or
- TCC's output; or
- the HVDC transfer into the North Island less 540MW (pole 1 capacity); or
- a Huntly or New Plymouth unit's output.

11.16 Typically, the Risk is set by either Otahuhu B or TCC operating at around 360MW. The majority of North Island spinning reserves are supplied by the hydro generation plants owned by Mighty River Power and Genesis because of the flexibility of hydro generation. The

majority of North Island interruptible load reserves are supplied by Vector.

11.17 There are two types of reserve:

- *Fast Instantaneous Reserve ("FIR"):* The change in generation or load that occurs within the first six seconds after the loss of generation.
- *Sustained Instantaneous Reserve ("SIR"):* The change in generation or load that occurs within the first sixty seconds after the loss of generation.

11.18 Due to the response times involved, Transpower requires less FIR than SIR. In the North Island, 55% of the Risk is required as FIR, and 100% of the Risk is required as SIR.

11.19 Reserves costs are charged on a proportional basis to generators operating generation units generating larger than 60MW. In the North Island there are five generators with units that have capacity greater than 60MW. They are Huntly, New Plymouth Power Station, Otahuhu B and TCC. The HVDC is also considered to be a North Island "generator" for the purposes of cost allocation.

11.20 The figure of 60MW is used as the cut-off as it is assumed that a loss of 60MW will not require the use of instantaneous reserves. To reflect this point, 60MW is subtracted from the total generation of each of the above generating plants when costs are being calculated.

11.21 The example below outlines how this cost allocation methodology works. It is assumed in this example that the cost of reserves for the trading period in question is $5000.

Generation plant	Generation (MW)	Units	At risk (MW)	% of total	Allocated cost
TCC	340	1	280	22%	$1,085.27
Otahuhu B	360	1	300	23%	$1,162.79
Huntly	750	3	570	44%	$2,209.30
New Plymouth	60	1	0	0%	$ -
HVDC	200	1	140	11%	$542.64
Total			1290		$5,000.00

11.22 The annual cost of the North Island reserve market is $10-15m. Otahuhu B incurs around one third of this cost. TCC's annual generation has tended to be slightly less than Otahuhu B and as such it is allocated around 25-30% of the total cost. The remainder of the cost is largely picked up by Huntly. The HVDC and New Plymouth Power Station are only allocated a small percentage of the total cost.

11.23 In the Scheduling, Pricing and Dispatch ("SPD") model, reserves and energy (ie, electricity offered in the spot market) are co-optimised. This means that:

11.23.1 The optimal generation pattern for the Risk-setting station (for example TCC, or Otahuhu B) is contingent on the availability and price of North Island reserves. If the price of reserves is too high, the Risk-setting generator may be "backed off" and replacement generation brought on from another plant. At present reserves prices in the North Island mean that it is unreasonable to expect that plants such as Otahuhu B and TCC will generate at their maximum levels for all trading periods because of the cost of reserves.

11.23.2 Most generators have the ability to offer both energy and reserves. The clearing prices of energy and reserve determine the optimal combination of energy and reserve for each generator. When reserves prices are high some generators are backed off in order to provide reserve. The converse occurs when energy prices are high.

11.24 Both of the above points mean that there can be a strong positive correlation between energy and reserves prices. Depending on circumstances there can also be a strong negative correlation between reserves prices and the generation pattern of the Risk-setting unit or plant.

11.25 While the Proposal may give Contact a bigger share of the supply side of the reserves market, it would also increase Contact's share of the demand side of the market. Contact (with TCC in its ownership) would be required to buy approximately 4 times as much reserves as it sells and therefore will be a price taker. This means that Contact would have no incentive to attempt to raise prices in the reserves market.

11.26 For the reasons given above, Contact does not consider that the Proposal will result in a substantial lessening of competition in the part of the ancillary services market constituted by reserves, or the ancillary services market as a whole. Accordingly, the remainder of this application addresses the wholesale market only.

DIFFERENTIATED PRODUCT MARKETS

12. Differentiated or standardised product markets

12.1 In *Practice Note 4*, the Commission implies that it considers electricity to be an undifferentiated product. Contact agrees with this characterisation, but submits that generators themselves are differentiated along 3 major dimensions:

- marginal costs of production;
- transportation costs due to congestion and thermal losses, and
- the speeds with which generators can adjust their output from one supply level to another.

13. Characteristics of differentiation

13.1 These characteristics and dimensions of differentiation, and their implications, are discussed elsewhere in this paper.

VERTICAL INTEGRATION

14. Vertical integration between firms involved at different functional levels

14.1 The electricity industry consists of a number of vertically integrated entities, providing generation, wholesale, and retail services. The four largest are Contact, Genesis, Meridian, and Mighty River Power.

14.2 NGC is not vertically integrated in this way in the electricity market.

14.3 The number of vertically integrated players in the relevant markets will not be reduced or increased as a result of the Proposal.

PREVIOUS INVOLVEMENT IN ACQUISITIONS

15. Previous involvement by NGC and Contact in acquisitions

NGC

15.1 NGC has been involved in four clearance applications to the Commission over the past three years. In 1999, the Commission gave clearance to the Australian Gas Light Company to acquire a 100% shareholding in NGC (*Decision 362*). In March 2000, the Commission

cleared NGC to acquire 75.8% of the shareholding in TransAlta NZ Limited (*Decision 387*). In June 2001, the Commission cleared NGC to acquire the low pressure gas distribution system (excluding meters and regulator sets) owned by AGL NZ Energy Limited in Hutt Valley, Tawa and Porirua areas (*Decision 435*). Finally, in August 2002, the Commission cleared NGC to acquire the gas pipeline assets of UnitedNetworks Limited (*Decision 470*). However, NGC was unsuccessful in its bid for UnitedNetworks.

15.2 Contact is unaware of other acquisitions NGC may have undertaken in the last three years, apart from those notified to the Commission.

Contact

15.3 Contact has not been involved in any acquisitions notified to the Commission in the past three years.

15.4 In December 1999, Contact purchased the assets comprising the Poihipi power station from Mercury Geotherm Limited (in receivership) and Poihipi Land Limited (in receivership).

15.5 Contact has not undertaken any other acquisition in the relevant markets in the last three years.

15.6 Mission Energy Pacific Holdings purchased shares in Contact from Edison Mission Energy Taupo Limited in 1999. It made further on-market acquisitions in 2001. Mission Energy Universal Holdings acquired its shares in Contact in 2 transactions in 2001.

15.7 Contact is not aware of any other acquisitions in the relevant markets by its interconnected bodies corporate in the last three years.

PART III: CONSTRAINTS ON MARKET POWER BY EXISTING COMPETITION

EXISTING COMPETITORS

16. **Existing competitors**

Wholesale market

16.1 Wholesale competitors by generation capacity:

Entity	Capacity (MW)	Percent of total capacity
Meridian	2,498	31.44%
Contact	1,816	22.86%
Genesis	1,520	19.13%
Mighty River Power	1,219	15.85%
NGC	412	5.19%
Trustpower	307	3.86%
Other	133	1.67%

16.2 These estimates are from Transpower's System Security Forecast 2002.

Other considerations

16.3 Major electricity users could enter the market by reducing their demand and selling electricity back into the system. This possibility is discussed further in Part V.

Is NGC a vigorous and effective competitor?

16.4 Contact submits that NGC cannot be described as a vigorous and effective competitor in the wholesale market.

16.5 NGC is limited in its ability to complete vigorously by the lack of diversity in its generation portfolio. In particular, the nature of TCC means that hedge contracts offered by NGC contain force majeure clauses that are more restrictive than those that Contact would be able to include in any hedge contracts that it offered.

16.6 On the other hand, Contact has shown itself to be a vigorous competitor. It is the only one of the four large generators that is not state-owned. Contact has demonstrated over the past 4 years that it has been willing to provide retail electricity services in nearly all areas. In addition, Contact has been involved in initiatives such as demand side participation and the move to real time pricing, to encourage better competitive conditions in the electricity market.

CONDITIONS OF EXPANSION

17. Market conditions relevant to the ability of existing firms to expand

The key conditions that affect the decisions of existing firms to expand are discussed below.

17.1 Resource Management Act 1991

17.1.1 The Resource Management Act is a relevant consideration for existing generators wishing to expand. However, Contact submits that it does not constitute a barrier to expansion.

17.1.2 Contact is aware of 4 consented sites in New Zealand for CCGT technology, and 5 consented sites for smaller wind and geothermal developments. These are set out below.

Site	Developer	Technology	Capacity (MW)
TCC-2	NGC	CCGT	500
EP3	Genesis	CCGT	400
Otahuhu C	Contact	CCGT	400
Whirinaki	Contact	CCGT	100*
Hau Nui	Genesis	Wind	8
Tauhara	Contact	Geothermal	15
Wairakei Binary	Contact	Geothermal	15
Mokai B partial	Tauropaki Trust	Geothermal	39
Gebbies Pass	Windflow	Wind	3

* *Under appeal*

17.1.3 Contact considers that the diversity of types of generation and owners of new plant shown in the table in paragraph 17.4 illustrate that the Resource Management Act is a low barrier to expansion and entry in the generation market.

17.2 Access to fuels

17.2.1 In order to expand, it is necessary for a generator to secure access to fuel. Gas, coal, water and diesel are common fuels.

17.2.2 Currently, the quickest strategy for expansion in the generation business is to purchase gas turbine ("GT") technology or wind turbines (as Meridian intends to do).[4]

17.2.3 In relation to GT expansion, however, a long-term gas supply contract would be required to enable this. As Maui is expected to deplete in 2007, the two known sources of significant quantities of gas are Pohokura and Kupe.

17.3 Stable regulatory environment

17.3.1 Investment decisions by existing competitors in the wholesale market are affected by the particular competitor's views of the future regulatory environment. Where there is regulatory uncertainty (whether because of the imminent threat of regulation, or because a perception of poor decision-making by the regulator itself) existing competitors may be reluctant to expand.

17.4 Expansion in the last 5 years

17.4.1 In the last 5 years, a number of existing generators have expanded their generation capacity, and new participants have commissioned generation plants as illustrated by the following table:

Plant	Owner	Commissioned	Technology	Capacity (MW)
Manapouri Upgrade	Meridian	2002	Hydro	175
Mokai	Mighty River Power	2000	Geothermal	53
Otahuhu B	Contact	2000	CCGT	380
Blue Mt Lumber	Meridian	2000	Biomass	4
Te Rapa	Contact	1999	Cogen	44
Tararua	Trustpower	1999	Wind	32
Horseshoe Bend	Pioneer	1999	Hydro	4
Ngawha Springs	Tai Tokerau Trust	1998	Geothermal	9.6
Glenbrook Upgrade	Duke	1998	Cogen	72
Kinleith	Genesis	1998	Cogen	34
Edgecomb	BOP	1998	Cogen	10
TCC	NGC	1998	CCGT	354
Opuna	Alpine Energy	1998	Hydro	7
Poihipi	Contact	1997	Geothermal	25
Rotokawa	Mighty River Power	1997	Geothermal	24
Kapuni	NGC	1997	Cogen	25

4 The Dominion Post, 19 October 2002, page C1.

Plant	Owner	Commissioned	Technology	Capacity (MW)
Kiwi	Kiwi Dairy Co	1996 / 97	Cogen	70
Te Awamutu	Genesis	1996	Cogen	26
Southdown	NGC / Mighty River Power	1996	Cogen	114
Hau Nui	Genesis	1996	Wind	3.5

18. **Existing businesses which could expand**

18.1 Contact is aware of the following projects that have been announced publicly:

Plant	Developer	Expected year of commission	Status	Technology	Capacity (MW)
Rotokawa upgrade	Mighty River Power	2002	Unit on order	Geothermal	6.5
Hau Nui expansion	Genesis	2003	Consenting	Wind	9.2
Gebbies Pass	Windflow Engineering	2003	Connection agree signed	Wind	3
Tokaanu refurbishment	Genesis	2003	Unknown	Hydro	50
Grey (Paparoa)	Westgas/ Trustpower	2003	Wells drilled, testing	Gas	5
Mokai B	Tauropaki Trust, Mighty River Power	2004	Awarded EPC	Geothermal	39
Rotokawa B	Mighty River Power	2004	Feasibility – talking with Ormat	Geothermal	30
Manapouri refurbish	Meridian	2005	Tender released	Hydro	50
Wairaki Binary	Contact	2004	Discussing with EPC suppliers	Geothermal	10 - 15
Huntly E3P	Genesis	2005	Tender to Mitsubishi	CCGT	400
Tukuirangi Rd	Geotherm Group	2006 – 2007	Consenting	Geothermal	45
Manawatu/Makara	Meridian	2004 – 2008	Purchased sites	Wind	200[5]

18.2 In addition, Contact understands that Meridian is in the process of gaining consents for its Project Aqua (3,000 GWHr/a), which is expected to be commissioned in 2008-2010.

5 ibid

18.3 There is also excess capacity presently in a number of Contact's competitors' portfolios, as demonstrated by the graph in paragraph 21.2.

18.4 Finally, the Minister of Energy has stated that he is "aware of serious investigations and planning amounting to more than 2000 megawatts capacity over the next decade, including some in the next two to three years".[6]

19. **Conditions influencing expansion**

19.1 In Contact's view expansion by Contact's existing competitors will be influenced by, in particular, future access to fuel, and stable regulatory conditions.

20. **Time frame for supply to increase**

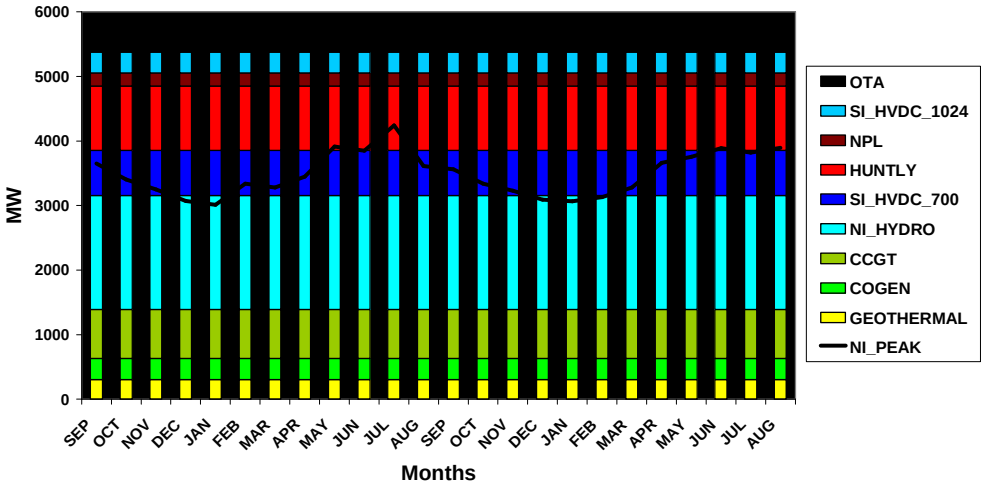
20.1 Timeframes for expansion are indicated in the table in paragraph 18.

21. **Extent to which the possible competitive response of existing competitors would constrain Contact**

21.1 In *Decision 340* the Commission considered that Genesis and Meridian could easily expand production to constrain Contact. As discussed in paragraph 11 above, Contact agrees with this analysis and considers that it still applies.

21.2 In addition, the graph below illustrates that, at times of peak demand, Contact's competitors have the capacity to expand generation to constrain Contact.

North Island Peak Load by Month v Generation Capacity (Most Recent Two Years)



6 Speech by Hon. Pete Hodgson, Minister of Energy, 7 October 2002.

22. **Extent that Contact would be constrained in its actions by the conduct of existing competitors**

22.1 Contact is constrained to a large extent by its competitors because of the possibility for competitors to increase generation, whether through utilisation of existing capacity or by building new generation.

CO-ORDINATED MARKET POWER

23. **Market characteristics facilitating or impeding co-ordinated behaviour**

Counterfactual

23.1 Before considering the market characteristics that impact on the possibility of coordinated behaviour it is important to identify the likely counterfactual against which the proposed acquisition should be contrasted.

23.2 NGC has resolved to divest its generation assets so that the status quo is not a likely counterfactual.

23.3 Specific nature of TCC

23.3.1 Contact submits that a new entrant into the New Zealand generation market is unlikely to be attracted to purchasing the Power Stations.

23.3.2 As stated elsewhere in this application, barriers to entry into the wholesale market are low for a new entrant. However, Contact submits that the TCC plant is not an attractive acquisition for a new generator that does not already have a substantial portfolio of generation plant. This is because TCC is based on first generation design that has not proved to be as reliable as CCGT plants using proven technology that would be built to provide new capacity now, and is less reliable than previous thermal plant [ ].

23.3.3 For example, it is inherent in the single shaft design of TCC that failure of the plant involves 100% failure. In contrast, other plants may lose only 25% of their output/production.

23.3.4 This gives rise to a level of plant risk that a new entrant would find difficult to manage economically without a portfolio of stations to allow it to manage that risk.

23.3.5 Contact therefore submits that the Commission should test this proposed acquisition against a counterfactual that involves acquisition of the Power Stations by an existing generator that already owns significant generation capacity.

23.4 Hedge contracts

23.4.1 [ ]

Market characteristics facilitating or impeding co-ordinated behaviour

23.5 Concentration

23.5.1 The generation sector is generally considered to be concentrated. However, it is less concentrated than many New Zealand industries: there are 6 major firms, 7 smaller players, and a few joint ventures.[7]

23.6 Elasticity of Demand

23.6.1 In the short run, the demand curve for electricity is relatively inelastic. However, demand side initiatives and the proposed move to real time pricing may increase demand side elasticity. These are discussed further in Part V.

23.7 Differentiation

23.7.1 Even though producing essentially the same product, generators take different factors into consideration when determining how to use their generation portfolio to produce electricity. As Joskow notes:

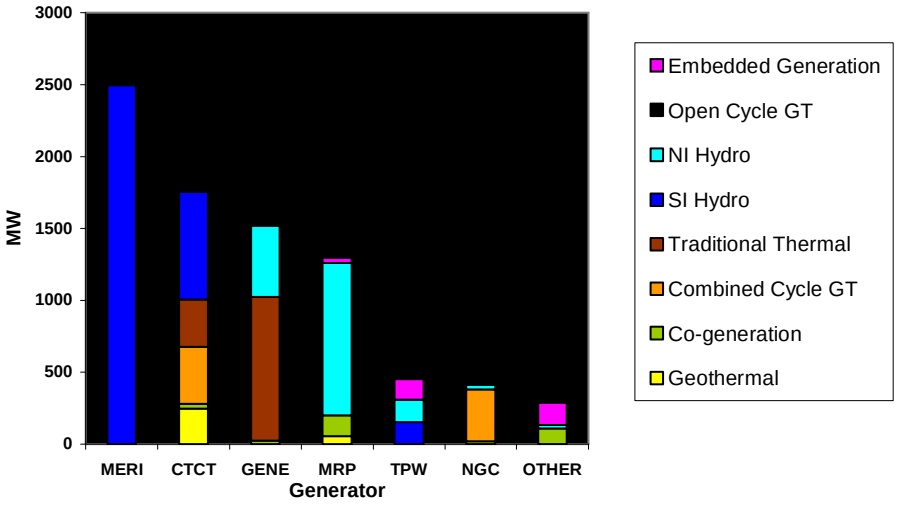
> *Though the generation suppliers produce more or less the same product – electric energy (reserve services and differences in adjustment speeds complicate this) –* ***they are differentiated from one another along three major dimensions: (a) marginal costs of production, (b) transportation costs due to congestion and thermal losses, and (c) the speeds with which they can adjust their output from one supply level to another****, including starting up from zero. The transportation costs in turn vary widely with system conditions – supply and demand – at all nodes on the network. In additional (sic),*

7 Sourced from information on the NZ Electricity website, www.nzelectricity.co.nz

generators can produce multiple services, consisting of both energy and various reserve services. So, the basic framework for thinking about competition among generators should be based on a fairly complicated spatial competition model with competing multiproduct firms at different locations which are "separated" by congestion costs and thermal losses. The suppliers of generation service are asymmetric, the costs of transportation vary widely over time as congestion varies, and the elasticity of supply around the competitive equilibrium varies widely over time as demand that must be met by just-in-time production fluctuates between very low and very high levels.[8]

23.7.2 These "dimensions of differentiation" referred to by Joskow are very evident in the New Zealand market. The graph below illustrates the differentiation of the current generators on at least one dimension – generation technology.

Figure 1: Generation Technology by Generator



23.8 Transparency

23.8.1 If prices are transparent, deviations from any collusive agreement (whether explicit or tacit) are easy to observe, making collusion easier to sustain.

23.8.2 In the wholesale market, bids are currently disclosed after 4 weeks. However, the Market Administrator of the NZEM (M-Co) applied in May 2002 to the Commission for authorisation of an arrangement to increase the amount of information available to market participants, by releasing bid and offer

8 Joskow, Paul L (2001) "California's Electricity Crisis", *NBER Working Paper Series*, Working Paper 8442.

information two weeks after the bids and offers are made. The Commission concluded, in its draft determination issued in November 2002, that the proposed arrangement would not be deemed to lessen competition, nor would in fact lessen competition. Contact agrees with these conclusions.

23.8.3 The ability to collude in the spot market is dependent, to a great extent, on knowledge, by competitors, of each other's hedge positions. New Zealand generating firms are not well informed about each other's hedge positions. This lack of hedge transparency raises uncertainty about the likely reactions of other players to the strategy of withholding capacity (making both unilateral and coordinated market power more difficult). It also makes detection of deviation from a collusive agreement more difficult.

23.8.4 Electricity wholesale market bidding strategies are multi-dimensional and extremely complicated. As Wolak notes:

> *A competitive electricity market is an extremely complicated non-cooperative game with a very high-dimensional strategy space.* ***A firm owning a single generating set competing in a market with half-hourly prices must, at a minimum, decide how to set the daily price for the unit and the quantity bid for 48 half-hours during the day.*** *In all markets that I am aware of firms have considerably more flexibility in how they bid their generating facilities. In [the Australian National Electricity Market], firms are allowed to bid daily prices and half-hourly quantities for 10 bid increments*[9] *per generating set (genset). For a single genset, this amounts to a 490-dimensional strategy space (10 prices and 480 half-hourly quantities). Bid prices can range from -9999.99 $AU to 5000.00 $AU*[10]*, which is the maximum possible market price. Each of the quantity increments must be greater than or equal to zero and their sum is less than or equal to the capacity of the generating set. Most of the participants in this market*

9 The NZEM rules permit generators to offer up to five tranches of quantity and price for each station, which further complicates the ability of a generator to predict the bidding strategies of its competitors. In addition, price and quantity may be varied up to 2 hours prior to dispatch.

10 Contact understands the upper limit for bid prices in Australia has been increased to 10,000 $AU.

> *own multiple gensets, so the dimension of the strategy space for these firms is even larger.*[11]

And:

> *These results also have implications for monitoring the exercise of market power. Even given knowledge of a firm's bidding behaviour in a competitive electricity market, without knowledge of generator's hedge contract position, it is difficult, if not impossible, to determine if the firm is able to exercise market power. For a specific bid function, there is often a hedge contract position that can rationalize that bid function as expected profit-maximizing.* ***This result implies that the strategic value of actual bid functions to other competitors is significantly reduced because a key ingredient necessary to determine a firm's profits from a given bidding strategy is unknown.*** *Unfortunately, the monitoring value of actual bid functions to a regulator is also significantly reduced for the same reason.*[12]
>
> *[Emphasis added]*

23.8.5 Infinite repetition of a game with a similar set of players at each stage lends itself to collusion. However, the complexities noted above severely limit the ability of generators to accurately predict competitors' behaviour.

23.9 Cost asymmetries and variation of costs over time

23.9.1 Cost asymmetries make it difficult for firms to agree (either explicitly or tacitly) on a focal price (or prices) on which to coordinate.[13] The "dimensions of differentiation" identified by Joskow (as discussed above) exacerbate these difficulties.

23.9.2 The marginal costs of generation plants vary significantly. In *Decision 340*, the Commission referred to submissions claiming that the marginal costs of TCC and Otahuhu B are similar and are significantly lower than Huntly, and accordingly that the owners of TCC and Otahuhu B would have scope to "game" by bidding up the price to just short of Huntly's likely bid.

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11 Wolak, Frank A (2000) "An Empirical Analysis of the Impact of Hedge Contracts on Bidding Behaviour in a Competitive Electricity Market", *International Economic Journal*, 14(2), 1-40, page 4.

12 Ibid, page 2.

13 Tirole, J (1988) *The Theory of Industrial Organization,* The MIT Press.

23.9.3 However, the analysis in the submissions that the Commission refers to is, in Contact's view, simplistic, for the following reasons:

- There is no single SRMC for a generation station. Rather, the SRMC varies depending on the output produced. For example, at a minimum, owners of CCGT plants assign separate SRMC figures to baseload and peak load output.
- The opportunity cost of gas for baseload generation will reflect "take" requirements in gas contracts. The SRMC of peak load output will reflect the opportunity cost of gas acquired above the level of the "take" requirements. The opportunity cost may reflect the value of banking, acquiring or selling additional gas.
- The SRMC of peak load output may be many times the SRMC of baseload output. (The figures the Commission referred to in paragraph 128 of *Decision 340* are likely to be baseload figures).
- Similarly, the SRMC of each of the four units at Huntly are likely to vary significantly. The SRMC of the first unit at Huntly is likely to be significantly lower than the figure that the Commission used in paragraph 128 of *Decision 340* ($28-32/MWh), reflecting the "take" requirements in the applicable gas or coal contracts.

23.9.4 The opportunity cost of both gas and coal will vary according to the take and deliverability constraints in contracts, banking or storage arrangements available, the outlook for gas sales and purchases and current hydrological conditions. Given different generation portfolios and fuel contracts the range of SRMC within each generation portfolio will differ between participants and may differ over time. Given limited knowledge of fuel contracts, estimating competitors SRMCs is highly problematic.

23.9.5 Accordingly, there is no simple SRMC stack of generation stations, and it cannot be said that TCC and Otahuhu B are next to each other in that stack. Rather, the SRMC stack is complicated, and the SRMCs of various levels of TCC and Otahuhu B output are separated by the SRMCs of various levels of Southdown and Huntly output.

23.9.6 The SRMC of hydro generation will also fall at times between that of TCC and Otahuhu B (and Southdown and Huntly), depending on the option value of water.

23.10 Uncertainty

23.10.1 If conditions in a market are stable and known with certainty, colluding oligopolists do not need to agree (explicitly or tacitly) on prices very frequently. However, if uncertainty is introduced, agreements must be reached more often, increasing transaction costs. In addition, divergence of opinion about future conditions becomes more likely. Accordingly, uncertainty can be expected to make reaching a collusive agreement harder.

23.10.2 New Zealand electricity markets are subject to considerable uncertainty due to the weather, particularly rainfall, as illustrated by the graph in paragraph 43.2. This has the effect of driving considerable variation in the costs of generation for companies with different types of generation plant and hydro plants in different locations.

23.10.3 Even if a collusive agreement was concluded, uncertainty makes ongoing enforcement of a collusive agreement extremely difficult.

23.10.4 For example, it would be difficult to maintain a collusive agreement in the face of external shocks to input prices when different firms have different cost structures. This is because some firms would be more directly affected by the shock than others, and would thus have stronger commercial motivations to break any collusive agreement to pursue their own commercial advantage.

23.10.5 In addition, it would be difficult to tell whether changes to price and output result from the reasonable responses of individual firms to exogenous shocks to the electricity market, or attempts to cheat on the collusive agreement. This means that it would be extremely difficult to enforce any collusive agreement that might have been negotiated.

23.10.6 As discussed earlier, there is also uncertainty on the demand side. The Market Surveillance Committee noted:

> *Oligopoly firms acting individually and repeatedly in a static environment can learn about the strategies of others to the detriment of prices in some circumstances. However, where there is possible generation entry or*

> *responsive demand and even where short term demand is not price responsive but there is uncertainty – such as in the level of demand – the co-ordination-like behaviour that predicates this outcome is very difficult to achieve.*[14]

The Market Surveillance Committee also stated:

> *There are relatively few firms in any electricity spot market worldwide. These markets are best described as oligopolies that are subject to much uncertainty, especially where there is any significant hydro generation.*[15]

23.10.7 As described elsewhere in this application, other sources of uncertainty arise from transmission constraints and plant outages.

24. **Market characteristics facilitating or impeding monitoring and enforcement of co-ordinated behaviour**

24.1 These have been discussed in the context of characteristics facilitating or impeding co-ordinated behaviour in paragraph 23 above.

25. **Details of any price co-ordination, price matching or price following by market participants**

25.1 Contact is not aware of any price co-ordination, price matching or price following in the markets identified in paragraph 11 above.

26. **Acquisition will not increase the risk of co-ordinated behaviour in the relevant market(s)**

In summary, Contact submits that the acquisition will not increase the risk of co-ordinated behaviour in either of the markets because:

26.1 *Differentiation:* Generators, and generation plants, are differentiated along three major dimensions – marginal costs, transportation costs, and the speed at which a plant's output can be adjusted. Such differentiation between competitors means that it will be difficult for competitors to collude.

26.2 *Transparency:* The complex, multi-dimensional nature of bid and offer strategies, and lack of knowledge of competitors' hedge position affects the feasibility of entering into a collusive arrangement and/or detecting deviation from a collusive arrangement.

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14 Market Surveillance Committee (2002) "Claimed 'Undesirable Situation' Arising from High Spot Prices in May/June 2001", Memorandum to the New Zealand Electricity Market, footnote 25.

15 Ibid, page 20.

26.3 *Cost asymmetries:* The marginal costs associated with particular generation plants vary significantly. Such asymmetries make it difficult for competitors to implement an explicit or tacit collusive agreement, and difficult for competitors to maintain this agreement when an exogenous shock to the industry occurs.

26.4 *Uncertainty:* Uncertainty increases the transaction costs of collusive arrangements and means that deviation from any such arrangement is more difficult to detect.

PART IV: CONSTRAINTS ON MARKET POWER BY POTENTIAL COMPETITION

CONDITIONS OF ENTRY

27. **Market conditions relevant to the ability of new firms to enter the market**

Contact considers that the following factors are relevant to the ability of new firms to enter the market.

27.1 Resource Management Act

27.1.1 While the key consented sites are currently owned by incumbent generators, the consents can, in most cases, be transferred with the land to which they relate.

27.1.2 For the reasons discussed in paragraph 17, Contact does not consider that the Resource Management Act constitutes a barrier to entry.

27.2 Access to fuels

27.2.1 As discussed in paragraph 17.2, access to fuels (gas, coal, diesel) is a key consideration for entry.

27.2.2 If a potential entrant wanted to enter the wholesale market using proven generation technology, the quickest strategy to enter is to purchase GT technology or to purchase wind turbines.

27.3 Stable regulatory environment

27.3.1 If the regulatory environment is unstable, this will affect a potential entrant's decision whether or not to invest in building generation plants.

27.3.2 If a potential entrant cannot be confident about the regulatory conditions that will exist over the life of the proposed generation plant, it may decide to defer investment until it perceives that regulatory conditions are stable.

27.4 Risk management

27.4.1 Risk management is a key to operating successfully in the generation wholesale market.

27.4.2 Contact submits that risk management is a particular concern in the context of the acquisition of TCC. This is because, as discussed in paragraph 23, TCC's first generation design has proved to be unreliable, and presents a higher risk for its owners in terms of consistency of generation output.

27.4.3 In Contact's view, the risks specifically associated with TCC mean that TCC is best suited to being part of a diversified portfolio, where other generation plant can be used to offset the risks presented.

27.4.4 The management of risk is a cost of doing business, but single plant entrants can manage the risk a number of ways, for example by using modern technology superior to that of TCC, or by entering into hedge arrangements with existing generators. The benefits of entry with the most modern generation plant may well outweigh any higher risk management costs of a single plant generator.

27.4.5 These points are illustrated by the patterns of entry currently occurring in Australia. The table in Appendix 1 to this Application lists current or planned generation developments in Australia that are known to Contact.

27.4.6 These developments illustrate that entrants and expanding players are using a diverse range of technology. In addition, the following are (or were) all new, single plant entrants:

- Mobil;
- Pacific Hydro;
- Duke;
- TrustPower;
- Wind Prospect, Primenergy;
- Worley Barns;
- Ausker; and
- Visy.

28. **Identity of businesses not currently supplying the market, but able to supply the relevant market**

28.1 Major industrial users and other large entities that are parties to large electricity purchasing contracts and/or have the potential to operate

co-generation plants are most likely to be able to supply the wholesale market.

28.2 Contact is aware of a proposal under which Norske Skog and Fletchers would build co-generation facilities, on numerous sites, in the Bay of Plenty.

28.3 It is also possible that new entities could invest in generation plant.

29. **Influential conditions of entry**

29.1 The considerations outlined in paragraph 27 above, in particular, risk management, would influence the decision whether or not to invest in generation plant to enter the wholesale market.

LIKELIHOOD, SUFFICIENCY AND TIMELINESS OF ENTRY

30. **Timeframe for entry to occur, and for market supply to increase, in respect of each of the potential entrants**

30.1 A major user could reduce demand within seconds or arrange to reduce demand over a period of weeks, depending on the nature of the major user's operations and supply contracts.

30.2 In the case of major users or other potential new entrants building their own generation plant, assuming that resource consents have been obtained, the likely timeframe for entry is approximately two years.

31. **The degree of likelihood a potential entrant would consider entry at pre-acquisition prices**

31.1 The table in paragraph 17.4 includes a number of new entrants. This demonstrates that new entry is likely and possible at present price levels.

32. **The degree to which the threat of entry is likely to cause market participants to react in a significant manner**

32.1 Major electricity users constitute approximately 1/3 of demand for electricity. These entities have demonstrated their ability and desire to investigate sources of electricity other than the major generators.

32.2 Contact considers that the threat of foregone demand is a considerable discipline on its conduct in the relevant market.

32.3 In addition, the threat of exit from New Zealand (for example, by New Zealand Steel) constrains generators/wholesalers.

33. **Conditions of entry that would influence *de novo* entry**

33.1 Contact considers that risk management and a stable regulatory environment would be the conditions that most influence a business decision to enter the market by setting up from scratch.

34. **Timeframe for *de novo* entry**

34.1 Assuming Resource Management Act consents have been obtained or acquired, the likely timeframe for *de novo* entry is approximately 2 years.

35. **Extent to which the possibility of *de novo* entry would constrain Contact**

35.1 Contact would continue to make investment decisions having regard to any *de novo* entry. Regardless of any *de novo* entry, however, significant constraints remain on Contact's conduct in the relevant market.

PART V: OTHER POTENTIAL CONSTRAINTS

CONSTRAINTS ON MARKET POWER BY THE CONDUCT OF SUPPLIERS

36. **Suppliers of goods or services to Contact in each identified market**

36.1 Contact purchases gas from the Maui field through the Crown's agent, Maui Gas Contract's Limited and from the TAWN field.

37. **Owners of suppliers**

37.1 TAWN is owned by Swift Energy. Shell and Todd, through Maui Development Limited, are the owners of the Maui field.

38. **Extent to which the conduct of suppliers of goods or services to Contact could constrain Contact in each relevant market**

38.1 Not applicable.

CONSTRAINTS ON MARKET POWER BY THE CONDUCT OF ACQUIRERS

39. **Acquirers of goods or services supplied by Contact in each identified market**

Wholesale market

39.1 Acquirers in the wholesale market are other retailers and major industrial users (for example, Carter Holt Harvey).

40. **Owners of acquirers**

40.1 These entities are generally privately owned, the main exceptions being the three state-owned enterprise generator/retailers.

41. **Extent the conduct of acquirers would constrain Contact in each affected market**

41.1 The extent to which Contact would be constrained by other generator/retailers who acquire electricity is discussed in Part III above.

41.2 Demand side participation

41.2.1 Recent industry initiatives have sought change to the relevant NZEM rules to enable real time pricing.

41.2.2 Real time pricing flattens demand curves, thereby reducing market power. Joskow states:

> *Real time pricing at the retail level allows consumers to express their individual preferences for reliability, introduces demand elasticity into the spot wholesale market and this in turn dampens price volatility and helps to mitigate supplier market power.*[16]

41.2.3 As the Commission is aware, M-Co has applied to the Commission for authorisation of an arrangement to increase the amount of information available to market participants, by releasing bid and offer information two weeks after the bids and offers are made. This arrangement will increase the information available to the demand side of the market, which is likely to increase demand elasticity.

41.2.4 Recently a number of retailers have started to offer large users hybrid hedge products that give fixed pricing for a portion of the customer's demand and spot pricing for the rest. The exposure to the spot market will affect decisions of large users to purchase electricity.

41.3 As discussed in paragraph 32, Contact is constrained by the real threat that major electricity users will either build their own generation plant or exit New Zealand entirely.

OTHER CONSTRAINTS ON MARKET POWER

This section addresses other constraints on the exercise of power by Contact

42. **Specific nature of the assets**

42.1 It is important to note that varying production from a generation unit, particularly a thermal one, has material costs. These costs include:

- reduced life expectancy;
- increased maintenance;
- start-up delays (e.g., 2 to 6 hours);
- start-up problems; and
- start-up staffing.

16 Supra, page 44.

42.2 For reasons such as these, owners of CCGT plants tend to avoid:

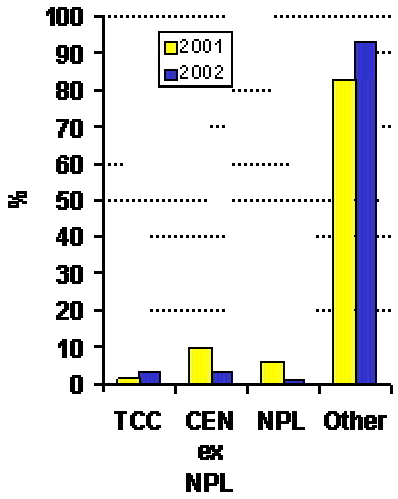
- shutting them down and then restarting them; and
- operating them as the marginal station, because of the associated load variations.

42.3 Analysis by Contact of public bid and offer data shows that:

42.3.1 for the period 1 May to 31 August 2001 (i.e., a "dry" winter), hydro plants set the price 69.37% of the time, thermal plants (i.e., Huntly and New Plymouth) 28.50% of the time, and CCGT plants (i.e., TCC and Otahuhu B) 2.13% of the time;

42.3.2 for the period 29 May to 1 September 2002 (i.e., a "normal hydro inflow" winter), hydro plants set the price 78.12% of the time, thermal plants (i.e., Huntly and New Plymouth) 18.18% of the time, and CCGT plants (i.e., TCC and Otahuhu B) 3.7% of the time; and

42.3.3 Contact and/or TCC set the price only a small percent of the time, as illustrated by the following graph:

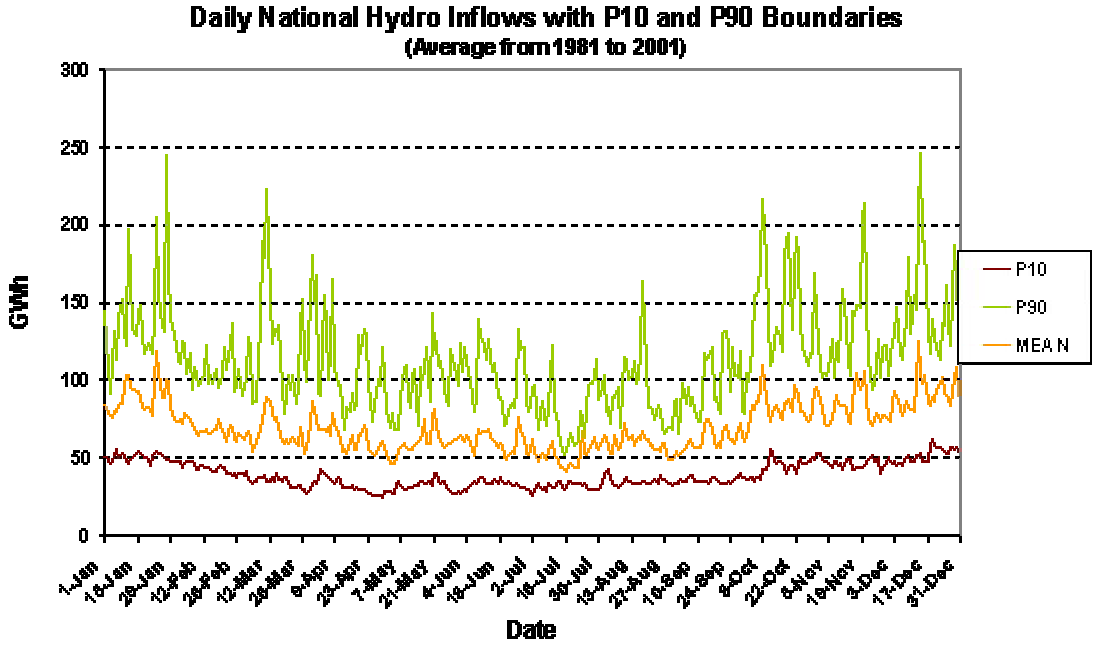


43. **Variability of demand and supply**

43.1 Supply and demand volatility increases the risk associated with attempting to exercise market power by withholding capacity. Too little may be withheld to be effective, or more may be withheld than is necessary.

43.2 The Market Surveillance Committee[17] referred to the significant volatility in New Zealand's hydro generation because of hydrological conditions. The following graph plots daily national hydro inflows with P10 and P90 boundaries.

17 Supra, page 7.



43.3 This sort of volatility makes it extremely difficult for a generator considering a decision to withhold capacity to predict supply responses by rivals.

43.4 A key variable is the option value of water, which sets the marginal cost of hydro stations. The option value of water to a particular generator will depend on, among other things, storage, views on hydrology (weather), hedge position and risk of other plant failure.

43.5 Competitors are either unlikely to know the value of some of these variables, or else they are likely to have different judgments about them. There is significant uncertainty amongst generators as to how their competitors operating hydro value water.

43.6 As the Market Surveillance Committee noted, firms are not well informed about each other's hedge positions.[18] As Wolak shows, hedge positions will affect spot market bidding strategies.[19] Accordingly, this lack of hedge transparency will raise uncertainty about the likely reactions of other competitors if a generator withholds capacity. This makes the exercise of unilateral or co-ordinated market power more difficult.

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18 Supra, page 15. In fact, assessment of rivals' hedge positions has possibly become even more complicated recently, with increased use by retailers of hedge products that expose customers to the spot market price, or at least to increased price flexibility, and the increased use of force majeure clauses.

19 Supra.

43.7 Clause 17 of the Government Policy Statement on electricity dated February 2002 states:

> *The Governance Board should ensure that aggregate information on hedge prices is made available, and should take steps to promote the development of trading markets that discover forward prices for electricity.*

43.8 While this policy may improve hedge *price* transparency, it will presumably not increase hedge *quantity* transparency. Generators will still find it difficult to predict their competitors' bidding strategies.

43.9 Plant outages and transmission constraints also affect the predictability of the supply stack. Transmission constraints can result in generation being dispatched out of order.

43.10 Finally, there is also a certain degree of unpredictability of demand.

44. Hedge contracts

Relationship between the Spot Market and Forward Market

44.1 As recognised by the Commission in *Decision 340*, trading in hedge (bilateral) contracts and spot electricity is not conducted independently such that they could be considered to fall into separate markets. Hedge and spot transactions comprise part of the same market: the wholesale market.

44.2 In an efficient commodity market with risk-neutral traders, all contracts – forward and spot – for delivery of the good at the same time and location will, on average, transact at the same price. If the forward price differs systematically from the spot price, this can be due either to risk aversion on the part of some traders or some impediment or cost that prevents full integration of the markets. For example, if buyers are risk averse, the contract price may exceed the expected spot price.

Hedging Strategy

44.3 Given that it is a function of volatile factors such as hydrology, the spot electricity price exhibits significant variance. Accordingly, generators face significant price risk in the electricity market, and they tend to want to control this risk to a certain extent. The primary tool for managing price risk is a hedge, which can be effected by vertical integration or contract.

44.4 Depending on its generation portfolio, each generator will have an optimal hedging position, or ratio of hedged output to expected output. As the ratio of hedges to expected output increases above zero, price risk reduces. However, there is a level of hedging beyond which hedges increase price risk again. Beyond this point, the generator will be exposed to the risk that it may be unable to generate as much output as expected. For example, Meridian would be exposed to hydro risk. A key risk to Contact is that Otahuhu B fails. This risk is significant because of Otahuhu B's significant capacity and its proximity to Contact's large retail customer base in Auckland.

44.5 Similarly, because of its scale in NGC's small portfolio of generating stations, NGC is very exposed to the risk of a TCC outage. This risk materially constrains NGC's ability to write hedge contracts. This constraint will be reflected in a relatively low ratio of hedged output to expected output, or through mechanisms such as force majeure clauses.

44.6 In theory, NGC can enter into contracts with other generators to provide it with insurance against TCC outages. For example, Contact has previously entered into contracts with NGC to provide TCC with cover during planned outages. However, contracts to cover forced outages are much more difficult to arrange. The key difficulty with providing cover for these events is information asymmetries about the risks that the contract would cover.

44.7 On the other hand, if Contact purchased TCC, it would make up a relatively smaller proportion of Contact's portfolio, and Contact would be better able to manage outage risk. Therefore, Contact would find it optimal to hedge a greater proportion of TCC's output than NGC has, or at least to offer less conditional hedges.

44.8 The proportion of electricity covered by hedge contracts has been steadily increasing in New Zealand, to the point where approximately 90% is covered by hedges.[20]

Hedge contracts and market power

44.9 In addition, the effect of increased hedge levels is to increase competition in the forward and spot markets.

44.10 Borenstein (2002, 202) notes the impact of this phenomenon on the market:

[20] Vertical integration between generators and retailers is a form of hedging. As the Market Surveillance Committee (2001) noted (footnote 20), retail customer contracts can be viewed as long-term hedge contracts that have some flexibility for price adjustment.

> *… there is a potential price-lowering effect in **both** forward and spot markets if, in aggregate, buyers purchase more power through long-term contracts.*

44.11 Building on the seminal work by Allaz and Vila (1993), Borestein states that:

> *The idea is that if firms are maintaining high prices by foregoing aggressive price cutting, then the existence of many forums for trading, especially over time, makes it more difficult to maintain such mutual forbearance. The forbearance could take the form of implicit or explicit collusion, or it could be the result of unilateral decisions that result in a less competitive outcome, such as under Cournot competition. The possibility of selling in advance makes it more difficult for firms to restrain competition. Once a firm has sold some output in advance, it has less incentive to restrict its output in the spot market in an attempt to push up prices in that market, since it does not receive the higher spot price on the output it has already sold through a forward contract. Thus, in anticipation of more aggressive competition in the spot market – because some firms have presold a significant quantity in a forward market – firms are likely to price more aggressively in the forward market.*[21]

44.12 In the context of the Australian National Electricity Market, Wolak comes to similar conclusions. For example, he states:

> *… I show that a firm's hedge contract position can exert a dramatic effect on its optimal bidding strategy, and its short-term desire to raise the market price. In fact, for sufficiently high hedge contract levels, a generator should attempt to reduce market prices below its own marginal cost of production by its optimal short-term bidding strategy.*[22]

44.13 As discussed above, hedge contracts mitigate market power in both spot trading and forward trading. The existence of a spot market eliminates the need for a seller of forward contracts to physically supply electricity: forward contracts are financial agreements.[23]

44.14 Market power in the market for forward electricity supply contracts is constrained in two ways:

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21 Borenstein, Severin (2002), "The Trouble with Electricity Markets: Understanding California's Restructuring Disaster", *Journal of Economic Perspectives*, 16(1), 191-211, at 202-203.

22 Supra, page 2.

23 Stoft, S. (1997), "The Benefits of Physical Bilateral Contracts: In Search of Example #1," Unpublished report to EPRI, http://www.stoft.com/x/other/other.shtml#misc03. See also Lien, Jeffrey S. (2000), "Forward Contracts and the Curse of Market Power," Working Paper.

44.14.1 the purchase of a forward contract may simply be foregone, with the purchase instead occurring in the spot market at the time it is required; and

44.14.2 because a forward contract for electricity is a financial contract, sellers of forward contracts are not constrained by the need to own generation capacity. Instead sellers of forward contracts simply bear the financial risk of the difference between spot and forward rates at some agreed point in the future. Without a physical supply constraint on the sales of forward contracts, the market for forward electricity supply contracts is open to entry by any financial institution.

44.15 It is also worth noting that the length of this timeframe works to reduce any potential for the exercise of market power. The longer the timeframe, the more options a buyer has; demand curves become more elastic as the timeframe increases.

Long term contracts and peak demand

44.16 As theory would predict, studies of the Californian wholesale electricity market show that market power concerns only arose at times of peak demand. Commenting on the Californian markets, Joskow states:

> *Since there is virtually no real demand elasticity yet in these markets, a[nd] during peak periods most demand is satisfied with purchases in the spot markets, it is evident that as demand grows and supply gets very tight, generators realize that a small amount of capacity withholding, even with moderate levels of concentration, can lead to large price increases.*[24]

44.17 [ ]

[redacted]

[24] Supra, page 19.

44.18 [ ]

44.19 [ ]

44.20 The acquisition by Contact of TCC and Cobb would clearly increase Contact's expected output. However, for the reasons set out above under the heading "Hedging Strategy", Contact would have an incentive to rebalance towards its optimal hedging ratio. (Of course, the acquisition of TCC would come with its existing hedges). Accordingly, the Proposal would not increase Contact's ability to exercise market power.

44.21 In fact, because the addition of TCC and Cobb to Contact's portfolio would allow it to more effectively manage risk, it is possible that Contact's optimal hedging ratio would increase following the acquisitions. This would of course reduce Contact's ability to exercise market power.

APPENDIX 1: AUSTRALIA – CURRENT AND PLANNED GENERATION DEVELOPMENT

Project	Developer	Capacity (mw)	State	T-fuel	Sched-yr	Status
Quarantine	Origin	95	SA	gas	2002	commissioned Apr 02, potential to add HRSG and increase to 175 MW in 2004
Somerton	AGL	150	VIC	gas	2002	delayed due to union bans & environ groups
Port Pirie	ANP	230	SA	gas	2004	SAMAG Mg refinery - gas from Minerva (BHP)
Portland Capes	Pacific Power	130	VIC	wind	2004	getting consents
Toora	Stanwell	0	VIC	wind	2005	getting consents - stalled
Buangor	Pacific Hydro	75	VIC	wind	2005	lodged permit application
The Drop (Mulwala)	Pacific Hydro	2	NSW	hydro	2005	lodged permit application
Lake Bonney	Babcock & Brown	80	SA	wind	2004	note in press article - EPC contract signed with Vestas
Tarong North	Tarong Energy	450	QLD	coal	2003	under construction - advanced cycle boiler
Kwinana B	Western Power	240	WA	gas	2003	first stage of 750 MW station, EPC awarded to Alstom
Toonumbar Hydro		0	NSW	hydro		net of small hydro on existing dams, 440 GWh, no date
Valley Power	Edison Mission	300	VIC	gas	2002	commissioned Jun 02
Ellison A & B	Ausker Energy	0	VIC	wind	2003	two sites, 55 Wt on one, 60 WT on other
Green Point	Wind Prospect, Primergy	44	SA	wind	2003	consents approved
Maryvale	Duke Energy	240	VIC	CCGT		cogen at pulp mill (Australian Paper), deferred indefinitely
Challicum Hills	Pac Hydro	0	VIC	wind		
Woolnorth (Bluff Pt)	Hydro Tasmania	10	TAS	wind	2002 -03	stage one in 2002, stage two 64 MW, stage three 130 MW post Basslink (2005)
Laverton North A	Singapore Power (Powernet)	258	VIC	gas	2004	have resource consents, construction start jan 03, conversion to CCGT plan in 05
Townsville		0	QLD	gas	2005	govt has 18 bids from public tender - in conjunction with PNG pipeline
Lithgow/Hampton	Wind Corp Au	0	NSW	wind	2002	commissioning? - SKM news
Hume	ActewAGL	0	ACT	gas	2003	
Esperance	Worley & Burns Roe	0	WA	gas		to replace diesel station, to extend Goldfields gas ppl
Tomago	Macquarie	250	NSW	gas	2004	phase one develop, ph 2 add HRSG & ST, preparing EIS
Myponga	Trustpower	0	SA	wind		
calc cogen	Alinta, Alcoa	0	WA	GT & HRSG		ph 1 of 1,200 MW potential, steam used in calcining; 4 moduals

Project	Developer	Capacity (mw)	State	T-fuel	Sched-yr	Status
Redbank	National Power	150	NSW	coal tailings		also plan for phase 2 - 132 MW
Brigalow	CS Energy	750	QLD	coal	2006	El-week aug 02
Wambo		450		gas	2006	El-week-aug 02
Condong	Delta	30	NSW	bagasse	2004	w/ Sugar milling co-op
Broadwater	Delta	0	NSW	bagasse	2004	w/ Sugar Milling Co-op
Osborne 2	ATCO Power	430	SA	gas		
Quarantine redev	Origin	170		gas	2004	OCGT to CCGT conversion
Kurnell	Sithe Energies	120	NSW	gas		Caltex refinery
Coolaroo	Visy Paper	40	VIC	gas		Visy intends to do alone; trouble w/ LT gas
Illawarra	Pacific Power	350	NSW	gas		feasibility stage
Pelican Point 2	National Power	200	SA	gas		
Port Kembla 2	Duke Energy	220	NSW	gas/flu gas		proposed to replace Port Kembla 1
Wagga Wagga	Pacific Power	100	NSW	gas		Gt Southern proposed offtake
Whyalla	Duke	250	SA	gas		steelworks BFG s/f for 50 MW; WMC (Olympic Dam)
Swanbank E	CS Energy	385	QLD	gas	2003	loc in SE QLD
Millmerran	Shell, Bechtel	862	QLD	coal	2002-03	synchronisation to grid in Jun 02, first use of super critical boilers
Loy Yang C	Edison Mission	300	VIC	gas	2002	in construction
Altona	Mobil	0	VIC			feasibility
Mobil Adelaide Refinary		0	SA	gas		feasibility
Tarpenna	Auspine, AusPower	60	SA	biomass	2003	feasibility
Bairnsdale A	Duke Energy	43	VIC	gas	2001	commissioned june 01
Bainsdale B	Duke Eenergy	43	VIC	gas	2002	on-line jan 02
Meekatharra	StateWest Power	0	WA	diesel		specialist in power to mining operations
Golden Plans (Gelong)	AES	375	VIC	gas		permit appealed by residents, project deferred indefinitely Apr 02
Wivenhoe B	Stanwell Corp	0	QLD	hydro	2003	BOT contract w/ SE QLD Water Crop; EPC contractor - GE Energy
Hallet	AGL	180	SA	gas	2002	first unit commissioned jan 02, completion due in jun 02

APPENDIX 2: REFERENCES

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Wolak, Frank A (2000) "An Empirical Analysis of the Impact of Hedge Contracts on Bidding Behaviour in a Competitive Electricity Market", *International Economic Journal*, 14(2), 1-40.

This Application is made by Contact Energy Limited ("the Company"). I am duly authorised to make this Application on its behalf.

The Company confirms that:

- all information specified by the Commission has been supplied;
- all information known to the applicant which is relevant to the consideration and determination of this application has been supplied; and
- all information supplied is correct as at the date of this application.

The Company undertakes to advise the Commission immediately of any material change in the circumstances relating to this application.

DATED this day of November 2003

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David Hunt
General Manager – Corporate Affairs
Contact Energy Limited