



Benchmarking Multinet's Gas Distribution Operating and Capital Costs Using Partial Productivity Measures

Prepared for
Multinet Pty Ltd

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AUSTRALIAN CAPITAL TERRITORY NEW SOUTH WALES VICTORIA

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EXECUTIVE SUMMARY

This report discusses the efficiency performance of Multinet's gas distribution business (GDB) over the period 1998–2006 compared to 10 of Australia's other GDBs and 4 New Zealand GDBs. The report was prepared for Multinet as part of the Victorian Gas Access Arrangement Review (GAAR) for 2008–2012. The benchmarking analysis was undertaken in early 2007.

The report presents a range of partial productivity performance indicators. Partial productivity indicators have the advantage of being relatively easy to construct and understand and, when considered together and jointly with key operating environment indicators, give a broad indication of overall relative performance.

The Australian GDBs included in the study are:

- ActewAGL (ACT);
- AGLGN (NSW);
- Alinta (Western Australia);
- Allgas Queensland;
- Country Energy (NSW);
- Envestra Albury (NSW);
- Envestra Queensland;
- Envestra South Australia;
- Envestra Victoria;
- Multinet (Victoria); and
- SP AusNet (Victoria).

The New Zealand GDBs included in the study are:

- NGC Distribution;
- Powerco;
- Vector; and
- Wanganui Gas.

The operating environment and performance measures we present are:

- Energy delivered (TJ), number of customers and network kilometres (Figure 1);

- Customer density (customers per kilometre) (Figure 2);
- Energy density per kilometre (TJ per kilometre) (Figure 3);
- Energy density per customer (TJ per customer) (Figure 4);
- Non-capital costs per TJ (Figure 5);
- Non-capital costs per customer (Figure 6);
- Non-capital costs per kilometre (Figure 7);
- Non-capital costs per unit output (Figure 8);
- Capital stock value per TJ (Figure 9);
- Capital stock value per customer (Figure 10).
- Capital stock value per kilometre (Figure 11);
- Capital expenditure per TJ (Figure 12);
- Capital expenditure per customer (Figure 13); and
- Capital expenditure per kilometre (Figure 14).

This suite of performance indicators establishes the relative performance of the GDBs across major facets of their businesses while identifying key operating environment differences. They provide an opportunity to examine the priorities and trade-offs of the various GDBs – for example, comparing operating expenditure (opex) and capital input indicators together allows trade-offs between opex and capital use to be recognised.

The time period covered is 1998 to 2006.

Multinet's operating environment characteristics can be summarised as follows:

- relatively high energy density per kilometre but with a marked dip in 2005 when there was a mild winter with lower space heating consumption;
- highest customer density per kilometre but with a slight decline in recent years; and,
- below average energy density per customer which rose from 1998 to 2000 but has since declined.

Multinet's efficiency performance can be summarised as follows:

- the lowest non-capital costs per customer in 2006, with significant improvement over the 9 year period;
- third lowest non-capital costs per TJ, with substantial improvement over the 9 year period;

- slightly above average non-capital costs per kilometre reflecting its high customer density but with a substantial decline over the period;
- overall the third most efficient Australasian GDB in 2006 when the three principal non-capital costs drivers are combined;
- relatively low capital stock values per TJ, with a decline over the period 1998 to 2002 and an increase in recent years reflecting a decline in throughput – costs were still well below average in 2006 and the average decrease over the period 1998 to 2006 contrasted with an increase for the sample on average;
- third lowest capital stock values per customer, with a slight increase in recent years – costs were still well below average in 2006 and Multinet's growth rate for this measure was less than the sample average growth rate;
- above average capital stock values per kilometre but these have declined over the period at a faster average rate than the sample average growth rate – the other Victorian GDBs also had higher than average costs for this measure reflecting high Victorian customer densities;
- relatively low capital expenditure per TJ with a noticeable decline experienced over the 9 year period;
- third lowest capital expenditure per customer with a substantial decline experienced over the period; and,
- above average capital expenditure per kilometre reflecting its high customer density but with a substantial decline experienced over the period.

Based on these indicators and recognising the nature of its network, Multinet has performed well on most indicators. The performance relative to the sample average and over time for non-capital costs has been particularly impressive, considering that Multinet has a high proportion of cast iron and other low pressure mains.

The relative performance of Multinet can also be assessed in terms of the average annual indicator growth rate over the period 1998 to 2006 (Table 1). Despite experiencing a decline in each density measure, Multinet performed substantially better than average in terms of growth rates for all the non-capital expenditure and capital expenditure measures, as well as capital stock values per TJ, and somewhat better than average in terms of capital stock values per kilometre and per customer.

1 INTRODUCTION

Benchmarking studies provide an important source of information on the performance of a gas distribution business (GDB) relative to its peers and the associated potential for further efficiency improvements. In this report, Meyrick and Associates ('Meyrick') benchmarks the efficiency performance of Multinet against 10 other Australian GDBs and 4 New Zealand GDBs.

Performance benchmarking provides GDBs and regulators with a means of assessing whether the GDBs are operating efficiently and whether cost savings are being passed on to users of the service. At a more detailed level, performance benchmarking can provide answers to the following types of questions:

- What productivity improvements have GDBs achieved?
- Are 'X' factors proposed by regulators sensible given past and expected future productivity gains?
- How close are the GDBs to best practice?
- What performance improvements would it be reasonable to expect the GDBs to achieve based on the observed performance of similar utilities?
- How should we adjust the GDBs' measured performance to allow for factors beyond management control?

The report uses a range of partial productivity performance indicators to compare the operating expenditure (opex) and capital input efficiency performance of these businesses with one another. Partial productivity indicators have the advantage of being relatively easy to construct and understand and, when considered together and jointly with key operating environment indicators, give a broad indication of overall relative performance.

The following parts of this section of the report summarise the terms of reference for the study and list Meyrick and Associates' benchmarking experience and the qualifications of the consultants involved. Section 2 then outlines in broad terms the data, companies and performance measures that were part of this study. Section 3 then reports the findings of the performance indicator analysis.

1.1 Terms of reference

Multinet's terms of reference to Meyrick requested the construction of as comprehensive and consistent a database as possible for Australian and New Zealand GDBs using publicly available information. The principal data sources for Australia were specified to be final Access Arrangement Information (AAI) filings, associated regulator decisions, regulator

performance monitoring reports and company annual reports and other website information. The principal data sources for New Zealand were specified to be the Disclosure Data filings of the gas distribution businesses and company annual reports and other website information. As long a time series of consistent information for each included gas distribution business as possible was requested. Comparisons were requested to include (but not be limited to) opex, capex, capital stock and total cost (where available) per kilometre of mains, per gigajoule sold and per customer. Energy and customer densities, proportions of cast iron mains and other operating environment characteristics that help explain Multinet's positioning on each of the benchmarks were also requested.

A copy of the letter of retainer for the study is presented in Attachment A.

1.2 Meyrick and Associates' experience and consultants' qualifications

Meyrick and Associates has been operating in Australia for 15 years as a specialist infrastructure consulting firm. Meyrick provides strategic policy advice and rigorous quantitative research to industry and government, particularly on infrastructure matters. Meyrick's experience and expertise covers a wide range of economic and industry analysis topics including:

- infrastructure regulation;
- benchmarking of firm and industry performance;
- productivity measurement;
- infrastructure pricing issues;
- corporatisation and privatisation of government enterprises; and
- analysis of competitive neutrality issues.

This report has been prepared by Dr Denis Lawrence, Director of Meyrick and Associates, with assistance from Meyrick Associates Dr John Fallon and John Kain.

Denis Lawrence has undertaken several major energy supply industry benchmarking studies including: benchmarking the performance of New Zealand's 29 electricity lines businesses and advising the Commerce Commission on appropriate X factors for each of the distribution businesses; benchmarking the performance of Australian and New Zealand gas distribution businesses for the Commerce Commission; benchmarking the productivity performance of the Australian state electricity systems against best practice in the US and Canada at both the system-wide level and for individual power plants; benchmarking the productivity, service quality and financial performance of 13 Australian electricity distribution businesses; and reviewing benchmarking work undertaken for regulators in NSW and Victoria. Denis has

worked on regulatory issues for electricity utilities, regulators, state Treasury departments, international agencies and prospective investors.

Denis holds a PhD in Economics from the University of British Columbia, Canada. Denis' summary CV is presented in Attachment B.

John Fallon is an Associate of Meyrick and Associates and Director of Economic Insights. John has extensive experience in economic modelling, econometric techniques, cost-benefit analysis, discounted cash flow analysis, and performance measurement. He has also been an adviser on economic regulation issues in several major price determinations and regulatory hearings in relation to airports, electricity, gas, rail, seaports and water infrastructure, for both private and public clients. John has been an adviser on competition issues in relation to several high profile mergers in the airline, energy, wholesale and retail sectors. John holds a PhD in Economics from the University of Western Ontario, Canada.

John Kain is an Associate of Meyrick and Associates and Principal of Eirdunda Associates. Prior to becoming a consultant John was employed by ACT Electricity and Water (ACTEW) as Chief Engineer and General Manager Engineering. Since leaving ACTEW, John has operated as an independent consultant in the energy distribution industry, specialising in the analysis of network costs and tariffs. John's clients have included the ACCC and distribution businesses. He has worked on several major benchmarking studies for Meyrick including assisting the NZ Commerce Commission with setting CPI-X thresholds for lines businesses. John holds Science and Engineering degrees from Sydney University.

Denis Lawrence has read the Federal Court Guidelines for Expert Witnesses and this report has been prepared in accordance with the Guidelines. A declaration to this effect is presented in Attachment C to the report.

2 DATA

2.1 Sources and adjustments

The data used in this study have been sourced exclusively from documents in the public domain and relate to the period 1998–2006. Data for most of the Australian companies in the study are publicly available for most of this period. However, there are fewer consistent observations publicly available for the New Zealand companies, reflecting the impact of mergers and asset sales. As a result, NGC and Vector only have observations for 2002 and 2006, respectively. Powerco has observations for 2004 to 2006 and Wanganui Gas has observations for 1999 to 2006.

The data sources for the Australian GDBs are the final approvals for access arrangements by jurisdictional regulators, the Access Arrangement Information (AAI) filings and the Essential Services Commission (2006) *Gas Distribution Businesses Comparative Performance Report*. In some cases information from annual reports has been used to supplement the information provided in the final approvals and AAIs, mainly in relation to information on customer numbers and network kilometres. Multinet has provided data for 2006 that is consistent with the ESC *Comparative Performance Report* for 2005.

The data sources used for the NZ gas pipeline businesses are the Information for Disclosure filings required by the Gas (Information Disclosure) Regulations 1997 and the New Zealand Commerce Commission (2004) *Gas Control Inquiry Final Report*.

In a few cases missing observations were estimated based on growth rates for the variable or a related variable before and after the missing year. In a number of cases adjustments were made to ensure the data related to comparable distribution functions. The data relate to the time periods normally reported by each company – some companies use calendar year reporting while others use financial year reporting.

The original data were in a mix of nominal and real terms based on different years. All cost data were converted to 2006 dollars using the all groups consumer price indexes for each country. The New Zealand data were then converted to Australian dollars using the OECD (2006) purchasing power parity for 2005 of 1.06862 \$NZ per \$A. Purchasing power parities between Australia and New Zealand have shown little variation from year to year so the 2005 estimate should be a reasonable approximation for 2006. Purchasing power parities are the rates of currency conversion that eliminate differences in international price levels and are commonly used to make comparisons of real variables between countries.

Non-capital expenditure includes operating and maintenance costs, administration costs, reported overheads and all other non-capital expenditure allowed by the relevant regulatory

authorities. It includes the cost of unaccounted for gas but does not include amortisation, depreciation, interest or profit.

In the case of the New Zealand GDBs capital expenditure was not reported and has been estimated as equivalent to reported depreciation. In the case of the Australian GDBs capital expenditure is in net terms after deducting customer contributions, which is the treatment that is approved by regulatory authorities.

Asset values are generally reported in terms of depreciated optimised replacement costs or, in the case of New Zealand, the analogous optimised deprival value.

The final approvals by jurisdictional regulators in Australia present data for the Australian GDBs on a building blocks basis. Information is presented on forecast revenue, throughput, non-capital (operating and maintenance) costs, the initial capital base and roll forward estimates of the capital stock. Additional information required but not presented in the final approvals is sourced from the AAIs. The data used for the Australian GDBs cover only the regulated activities. Data relating to large industrial users whose supply is not regulated are not included. Inclusion of this data would require access to information not generally in the public domain and has been beyond the scope and timeframe of this study.

Despite the existence of a National Gas Code, the amount of detail provided by both the regulators and the utilities differs and data are typically not drawn together in the one location. Some differences remain in the coverage of distribution activities across states although this is now more consistent than in earlier years.

In many cases the jurisdictional regulators' final approvals have used data substantially different from that presented by the utilities in their initial AAIs. Not all jurisdictions have required the utilities to supply revised AAIs consistent with the final approvals. We have used the final approval information, where possible, as we consider that it is the most consistent and objective source of information available. While we have used the latest available information, in some cases the data represent forecasts as presented in the regulatory filings rather than historic information reported after the event.

While the publicly available data used in this study are broadly consistent and provide a reasonably accurate picture of the utilities' operations, more input from the utilities themselves would be required to ensure complete consistency and reliability. Consequently, the results of the comparative benchmarking presented here should be considered as broadly indicative rather than as definitive and precise.

2.2 Gas distribution businesses included in the study

The database formed for the study includes 11 Australian GDBs and 4 New Zealand GDBs. A brief summary of the operations of the included GDBs follows.

2.2.1 Australian GDBs

ActewAGL, Australian Capital Territory

ActewAGL is the distribution business supplying gas and electricity in the Australian Capital Territory (ACT). The total population of the ACT in 2006 was 328,817 (ABS 2006). Gas is distributed to a predominantly residential customer base with Canberra the largest market. There are few industrial users of any significance. Canberra covers a large geographical area and the majority of urban development is low density. This results in a commensurately low density distribution network measured in terms of customers per kilometre of main and TJ supplied per customer.

In 2006 ActewAGL supplied 105,469 customers with 7,350 TJ of gas from a distribution network of 3,923 kilometres of mains.

AGL Gas Networks (AGLGN), NSW

AGLGN distributes gas to Newcastle (population of 508,597 in 2005), north of Sydney, Sydney (population of 4,255,954 in 2005), and Wollongong, south of Sydney (population of 274,838 in 2005), along with several smaller population centres located between these larger markets and regional country centres in NSW. AGLGN has the largest distribution network and customer base of the Australian gas GDBs.

In 2006 AGLGN supplied 998,495 customers with 99,107 TJ of gas from a distribution network of 24,724 kilometres of mains.

Alinta, Western Australia

Alinta is the principal GDB of gas to Western Australian businesses and households. It operates the gas distribution system in the mid-west and south-west of Western Australia. It services the Perth Metropolitan region, the Albany region and Kalgoorlie with three separate gas distribution networks.

In 2006, Alinta supplied 539,995 customers with 30,802 TJ of gas from a distribution network of 11,752 kilometres of mains.

Allgas Energy Limited (Allgas), Queensland

Allgas supplies gas to consumers in several areas in and around Brisbane and to several Queensland regional areas. The Allgas distribution system is separated into four operating regions. These are:

- the Brisbane region (south of the Brisbane river);
- the Western region (including the townships of Toowoomba and Oakey);
- the South Coast region (including Surfers Paradise and Coolangatta); and,
- the Tweed Heads region in north east New South Wales.

The network comprises 2,868 kilometres of low, medium and high pressure mains. About 68 per cent of the network is located in Brisbane, 19 per cent in the Western region and the remaining 13 per cent on the South Coast and Tweed Heads.

Queensland's mild to hot climate means that residential and commercial heating demand is low. Residential demand for gas is mainly for hot water systems and cooking. In 2005 Brisbane's population was 1,816,958 (ABS 2006). More than 70 per cent of Allgas' gas demand is from large customers with annual consumption in excess of 10 terajoules (QCA 2001b, p.40).

In 2006 Allgas supplied 63,619 customers with 10,030 TJ of gas from a distribution network of 2,868 kilometres of mains.

Country Energy, Wagga Wagga, NSW

Country Energy supplies gas to the city of Wagga Wagga (population of 53,446 in 2005) in southern regional NSW. In 2006 there were 18,052 residential customers and 274 non-residential customers.

In 2006 Country Energy supplied its 18,326 customers with 1,412 TJ of gas from a distribution network of 622 kilometres of mains.

Envestra Albury, NSW

Envestra Albury operates in the large regional centre on the border of NSW and Victoria often referred to as Albury–Wodonga. In 2005 the population of the region was estimated to be 100,175 (ABS 2006). In 2006 there were 20,688 residential customers and 960 non-residential customers.

In 2006 Envestra Albury supplied its 21,648 customers with 3,515 TJ of gas from a distribution network of 556 kilometres of mains.

Envestra Limited (Envestra Queensland), Queensland

Envestra Queensland's distribution network can be divided into two regions:

- the Brisbane region (including Ipswich and suburbs north of the Brisbane river); and,
- the Northern region (serving Rockhampton and Gladstone).

The network consists of 2,199 kilometre of low, medium, high and transmission pressure mains. Assets used to service the Brisbane region comprise 89 per cent of the network with the balance of 11 per cent attributable to the Northern region (QCA 2001b, p.41).

Envestra Queensland is subject to similar climatic influences on residential gas demand as Allgas. Customer numbers are greater than those for Allgas but regulated volumes are smaller. However, Envestra has a number of unregulated industrial customers with very large volumes that are not reflected in the data used in this study. In 2006 there were 70,852 residential customers and 5,573 non-residential customers.

In 2006, for its regulated distribution network, Envestra Queensland supplied its 76,175 customers with 4,729 TJ of gas from a distribution network of 2,199 kilometres of mains.

Envestra Victoria

Envestra Victoria serves parts of the Melbourne gas market (population of 3,635,508 in 2005) as do Multinet and SP AusNet. Envestra Victoria also serves several areas in north central Victoria. As described by Envestra Victoria (2002c, p.1) in their AAI, 'the Distribution System serves the northern, outer eastern and southern areas of Melbourne, Mornington Peninsula and rural communities in northern and north-eastern Victoria. The Distribution System is divided into three Zones – North, Central and Murray Valley.'

Melbourne's gas market is well established and cool to mild climatic conditions result in high residential gas consumption for heating, cooking and hot water systems. A relatively high concentration of industry also supports industrial gas demand provided that prices are competitive with other sources of energy supply. In 2006 there were 476,045 residential customers and 22,053 non-residential customers.

In 2006, Envestra Victoria supplied its 498,098 customers with 55,322 TJ of gas from a distribution network of 8,855 kilometres of mains.

Envestra SA, South Australia

Envestra SA's distribution network services the Adelaide (including the Barossa Valley), Peterborough, Port Pirie, Riverland, South-East and Whyalla regions. Adelaide's population in 2005 was 1,129,145. As with Melbourne, Adelaide's winter climate is conducive to

relatively high residential gas demand for heating. In 2006 there were 354,819 residential customers and 8,712 non-residential customers.

In 2006, Envestra SA supplied its 363,531 customers with 26,484 TJ of gas from a distribution network of 7,282 kilometres of mains.

Multinet, Victoria

The Multinet distribution system covers the eastern and south-eastern suburbs of Melbourne extending over an area of approximately 1,600 square kilometres (Multinet 2002, p.68). In 2005 there were 618,000 residential customers and 21,000 non-residential customers.

In 2006, Multinet supplied its 646,597 customers with 61,504 TJ of gas from a distribution network of 9,413 kilometres of mains. Multinet has the highest customer density of the Australasian GDBs.

SP AusNet, Victoria

SP AusNet was formerly TXU networks which was formerly Westar (Assets) Pty Ltd. SP AusNet is the trading name of SPI Networks. It delivers gas to over 500,000 customers across a geographically diverse region spanning 110,000 square kilometres and servicing the western half of Victoria, from the Hume highway in metropolitan Melbourne west to the South Australian border and from Bass Strait to Horsham and just north of Bendigo (TXU Networks 2002, p.45). In 2005 there were 489,936 residential customers and 18,427 non-residential customers.

In 2006, SP AusNet supplied its 508,363 customers with 67,100 TJ of gas from a distribution network of 8,800 kilometres of mains.

2.2.2 New Zealand GDBs

Natural Gas Corporation (NGC)

NGC was purchased by Vector Ltd in two tranches in 2004 and 2005. It distributes gas to around 30 towns and cities in the North Island of New Zealand.

In 2002, NGC supplied 52,318 customers with 10,236 TJ of gas from a distribution network of 2,639 kilometres of mains. The 2006 results for its distribution areas are incorporated in those of Vector.

Powerco Limited

Powerco is based in New Plymouth (population of 49,500) and distributes gas in the upper central and lower central North Island. It is a dual gas and electricity operator. Powerco's service area includes Taranaki, Wanganui (population of 40,000), Manawatu, Wairarapa, the Hutt Valley, Porirua (district population of 50,300), Wellington (population of 363,400) and

Tauranga (population of 103,600). Powerco acquired part of UnitedNetworks' gas operations in 2002 comprising the Hawkes Bay, Wellington, Horowhenua and Manawatu networks.

In 2006, Powerco supplied its 103,986 customers with 10,553 TJ of gas from a distribution network of 5,609 kilometres of mains.

Vector Ltd

Vector Ltd operates the gas distribution network in Auckland, the most populous city in New Zealand (estimated population in 2003 of 1,199,300). Vector acquired the remaining part of UnitedNetworks' gas operations in 2002 comprising its Auckland gas network.

Vector acquired 67.21 per cent of NGC's gas distribution business in 2004 and the balance of 32.79 per cent in 2005 (Vector Limited and NGC Holdings Limited 2006). The 2006 figures represent the combined operations of Vector and the former NGC.

In 2006, Vector supplied 136,769 customers with 23,022 TJ of gas from a distribution network of 9,358 kilometres of mains.

Wanganui Gas

Wanganui Gas supplies gas in Wanganui, Marton and Bulls. Wanganui, with an estimated population in 2003 of 40,000 (Statistics New Zealand), is the largest part of the distribution network.

In 2006, Wanganui Gas supplied 10,581 customers with 1,035 TJ of gas from a distribution network of 362 kilometres of mains.

2.3 Performance measures

A key aspect of implementing CPI-X regulation relates to productivity levels. Costs will be allowed or reimbursed on the basis of efficient practice. Estimates of likely future achievable productivity gains will be the key determinant of 'X'. Judgements about 'efficient' costs are often made on the basis of direct comparison with comparable best practice utilities. In the short term, judgements about achievable productivity gains in future years will be heavily influenced by recent changes in productivity performance.

Consequently, our performance measurement framework must capture productivity performance across the main drivers of costs: operating and maintenance expenditure, fixed assets and capital expenditure. This is done by incorporating a range of partial productivity indicators where opex, capital replacement costs and capital expenditure are normalised on a number of different bases including throughput, customer numbers and network kilometres. In the case of operating and maintenance expenditure we also normalise by a comprehensive measure of GDB output based on operating and maintenance expenditure output cost shares.

The operating environment and performance measures we use in the study are:

- Energy delivered (TJ), number of customers and network kilometres (Figure 1);
- Customer density (customers per kilometre) (Figure 2);
- Energy density per kilometre (TJ per kilometre) (Figure 3);
- Energy density per customer (TJ per customer) (Figure 4);
- Non-capital costs per TJ (Figure 5);
- Non-capital costs per customer (Figure 6);
- Non-capital costs per kilometre (Figure 7);
- Non-capital costs per unit output (Figure 8);
- Capital stock value per TJ (Figure 9);
- Capital stock value per customer (Figure 10).
- Capital stock value per kilometre (Figure 11);
- Capital expenditure per TJ (Figure 12);
- Capital expenditure per customer (Figure 13); and
- Capital expenditure per kilometre (Figure 14).

This suite of performance indicators establishes the relative performance of the GDBs across major facets of their businesses. It provides an opportunity to examine the priorities and trade-offs of the various GDBs, for example comparing operating expenditure (opex) and capital input indicators together allows trade-offs in opex and capital use to be recognised.

In the following section indicators are presented for the 15 GDBs covering the years 1998 to 2006. Data for the full 9 year period are only available for Multinet and Envestra Victoria while data for the 8 year period 1999 to 2006 are available for five GDBs. Another two GDBs have data for the 7 year period 2000 to 2006 and two for the six year period 2001 to 2006. Another GDB has data for 2000 to 2005. There are generally fewer observations available for the New Zealand GDBs due to merger and restructuring activity and two of the three NZ GDBs only have observations for one year – 2002 in the case of NGC and 2006 in the case of Vector.

The indicators are presented in graphical form ranked according to 2006 values. For the two GDBs that do not have 2006 data, NGC is included based on its ranking using 2002 data and SP AusNet is included based on its ranking using 2005 data.

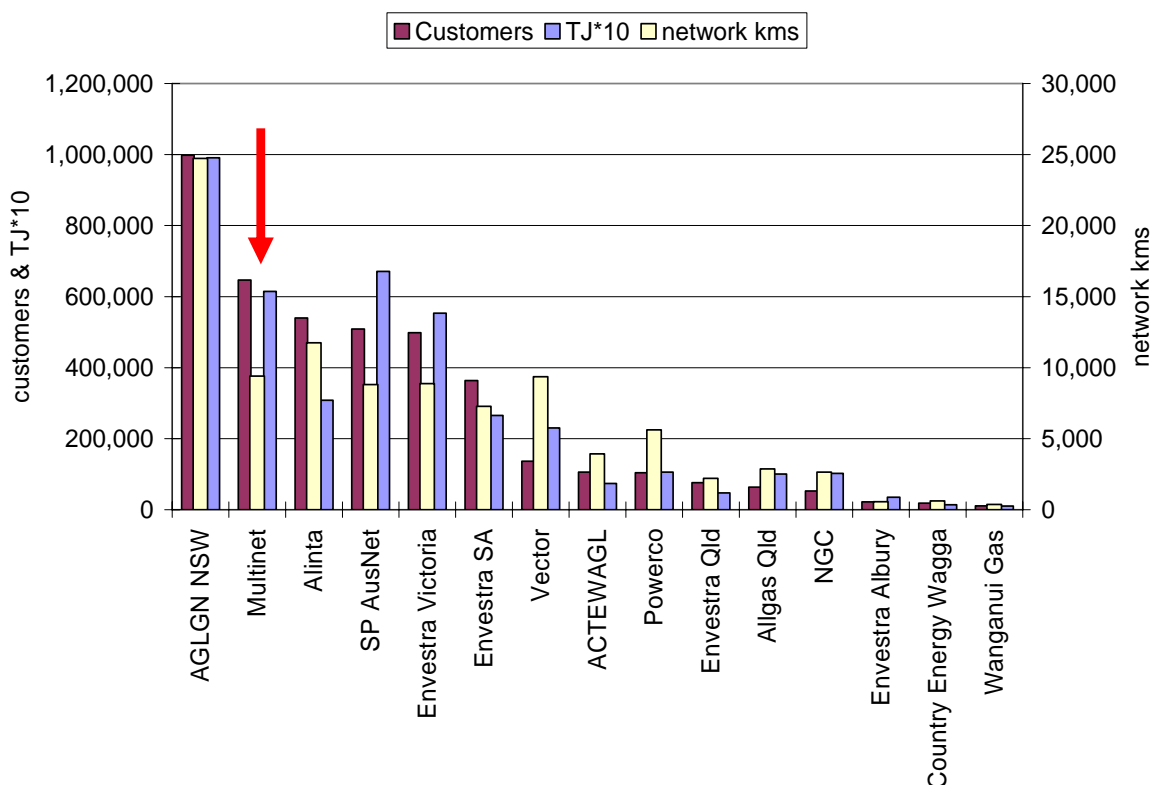
3 PERFORMANCE ASSESSMENT

3.1 Operating environment features

The 15 Australian and New Zealand distribution businesses operate in varying environments with often substantial differences in network size, amount of throughput, demand growth, number of customers, the mix of rural, urban and CBD customers and of residential and business customers.

Multinet is a relatively large GDB in terms of customers, throughput (TJ) and its network kilometres of mains compared to the other GDBs in the study (Figure 1 and Table 1). In 2006 it had the second largest customer base, third largest energy throughput and the third longest network based on the most recent available information.

Figure 1: Key features of the operating environment, 2006 or latest year



Source: Meyrick and Associates gas utility database

Table 1 contains all of the performance measures for 2006 or the latest available year and average annual compound growth rates from the earliest year available to 2006 or the latest year available.

Table 1: Operating and performance measures in \$A2006, Australian and New Zealand GDBs, 2006 or latest year and average annual growth

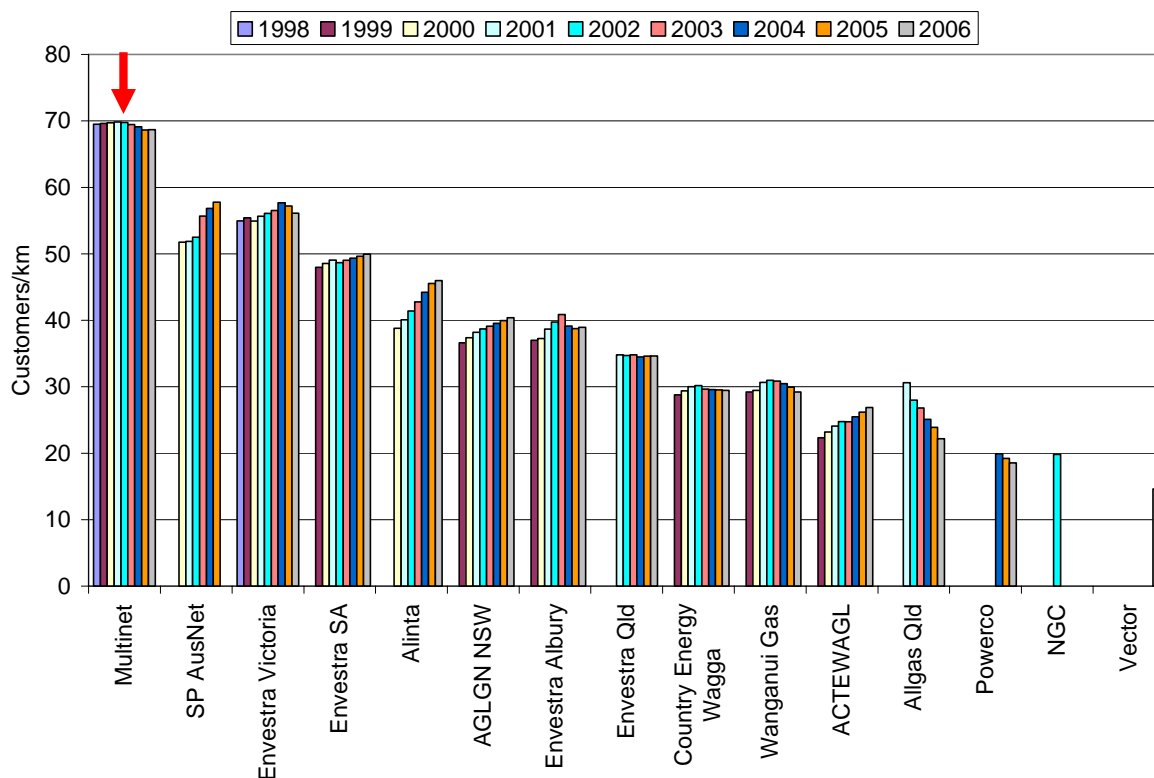
Company	Year/Period	TJ	Customers	km	Cus/km	TJ/km	TJ/cus	nc/TJ \$A06	nc/cus \$A06	nc/km \$A06	nc/unit \$A06	csv/TJ \$A06	csv/cu \$A06	csv/km \$A06	ce/TJ \$A06	ce/cus \$A06	ce/km \$A06
AGLGN NSW	2006	99,107	998,495	24,724	40	4.01	0.099	1,183	117	4,742	1.75	19,035	1,889	76,304	1,227	122	4,918
Multinet	2006	61,504	646,597	9,413	69	6.53	0.095	632	60	4,133	1.02	15,180	1,444	99,183	632	60	4,133
Alinta	2006	30,802	539,995	11,752	46	2.62	0.057	1,352	77	3,543	1.46	22,886	1,305	59,983	1,037	59	2,718
SPI/TXU	2005	67,100	508,363	8,800	58	7.63	0.132	502	66	3,825	0.95	13,378	1,766	102,004	967	128	7,373
Envestra Vic	2006	55,322	498,098	8,879	56	6.23	0.111	736	82	4,585	1.25	14,403	1,600	89,739	648	72	4,037
Envestra SA	2006	26,484	363,531	7,282	50	3.64	0.073	1,688	123	6,139	2.16	30,795	2,243	112,004	981	71	3,567
Vector	2006	23,022	136,769	9,358	15	2.46	0.168	1,036	174	2,548	1.73	15,958	2,686	39,260	424	71	1,042
Powerco	2006	10,553	103,986	5,609	19	1.88	0.101	1,290	131	2,427	1.65	18,375	1,865	34,572	837	85	1,576
ACTEWAGL	2006	7,350	105,469	3,923	27	1.87	0.070	1,799	125	3,370	1.97	32,741	2,282	61,344	1,346	94	2,523
Allgas Qld	2006	10,030	63,619	2,868	22	3.50	0.158	1,077	170	3,766	1.88	28,729	4,529	100,471	2,772	437	9,693
NGC	2002	10,236	52,318	2,639	20	3.88	0.196	987	193	3,829	1.93	11,853	2,319	45,975	433	85	1,680
Envestra Qld	2006	4,729	76,175	2,199	35	2.15	0.062	2,897	180	6,231	3.11	46,817	2,906	100,691	3,087	192	6,640
Envestra Albury	2006	3,515	21,648	556	39	6.32	0.162	395	64	2,496	0.79	7,979	1,296	50,445	276	45	1,747
Country Energy	2006	1,412	18,326	622	29	2.27	0.077	1,573	121	3,572	1.87	31,831	2,453	72,270	1,171	90	2,659
Wanganui Gas	2006	1,035	10,581	362	29	2.86	0.098	1,270	124	3,633	1.74	19,328	1,891	55,283	842	82	2,408
Average		27,480	276,265	6,599	37	3.86	0.111	1,228	121	3,923	1.68	21,953	2,165	73,302	1,112	113	3,781
Average annual growth								per cent									
AGLGN NSW	2006/00	-0.9	4.0	2.7	1.3	-3.5	-4.7	-1.0	-5.7	-4.5	-3.7	1.3	-3.5	-2.3	5.1	0.2	1.5
Multinet	2006/98	0.6	0.8	1.0	-0.1	-0.3	-0.2	-5.6	-5.8	-5.9	-5.7	-0.6	-0.8	-0.9	-5.6	-5.8	-5.9
Alinta	2006/00	1.7	4.7	1.8	2.9	-0.1	-2.9	-4.1	-6.9	-4.2	-5.3	-0.9	-3.8	-1.0	-0.4	-3.3	-0.5
SPI/TXU	2005/00	-0.2	3.9	1.7	2.2	-1.8	-4.0	-2.9	-6.7	-4.6	-4.9	1.9	-2.1	0.1	20.9	16.1	18.7
Envestra Vic	2006/98	1.7	2.6	2.4	0.3	-0.6	-0.9	-4.7	-5.5	-5.3	-5.2	-0.8	-1.7	-1.4	-4.1	-5.0	-4.7
Envestra SA	2006/99	-0.5	1.4	0.9	0.6	-1.4	-1.9	-0.9	-2.9	-2.3	-2.0	1.2	-0.7	-0.1	-0.3	-2.2	-1.7
Powerco	2006/04	3.6	-1.6	2.1	-3.6	1.5	5.2	3.5	8.9	5.1	6.1	-3.5	1.6	-2.0	2.8	8.1	4.3
ACTEWAGL	2006/99	2.9	4.8	2.0	2.7	0.9	-1.8	-3.8	-5.5	-3.0	-4.4	-1.3	-3.1	-0.5	7.3	5.4	8.3
Allgas Qld	2006/01	1.0	1.1	7.9	-6.2	-6.4	-0.2	-0.7	-0.9	-7.1	-2.1	3.9	3.8	-2.7	17.8	17.6	10.2
Envestra Qld	2006/01	1.3	1.2	1.2	-0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.6	0.7	0.6	6.1	6.2	6.1
Envestra Albury	2006/99	3.0	3.4	2.6	0.7	0.4	-0.3	-3.3	-3.6	-2.9	-3.3	-2.8	-3.1	-2.4	-1.2	-1.5	-0.8
Country Energy	2006/99	-0.2	3.0	2.7	0.3	-2.8	-3.1	1.8	-1.4	-1.1	-0.1	3.4	0.2	0.5	-3.6	-6.6	-6.3
Wanganui Gas	2006/99	1.8	0.5	0.5	0.0	1.2	1.2	2.4	3.6	3.6	3.1	3.0	4.2	4.3	0.8	2.0	2.0
Average		1.2	2.3	2.3	0.1	-1.0	-1.0	-1.5	-2.5	-2.5	-2.1	0.4	-0.6	-0.6	3.5	2.4	2.4

Note: TJ is terajoules, km is kilometre, nc is non-capital costs, cus is customers, csv is capital stock value as measured by the depreciated replacement cost of assets, ce is capital expenditure

Various density measures for all companies in the sample for all available years are presented in Figures 2 to 4.

Multinet has the highest customer density with around 69 customers per kilometre compared to the sample average of 37 customers per kilometre (Figure 2 and Table 1). There has been a marginal decline in Multinet’s customer density over the period 1998 to 2006, mostly in 2004 and 2005, while customer density for GDBs on average has increased marginally over the sample period.

Figure 2: **Customer density, 1998–2006**

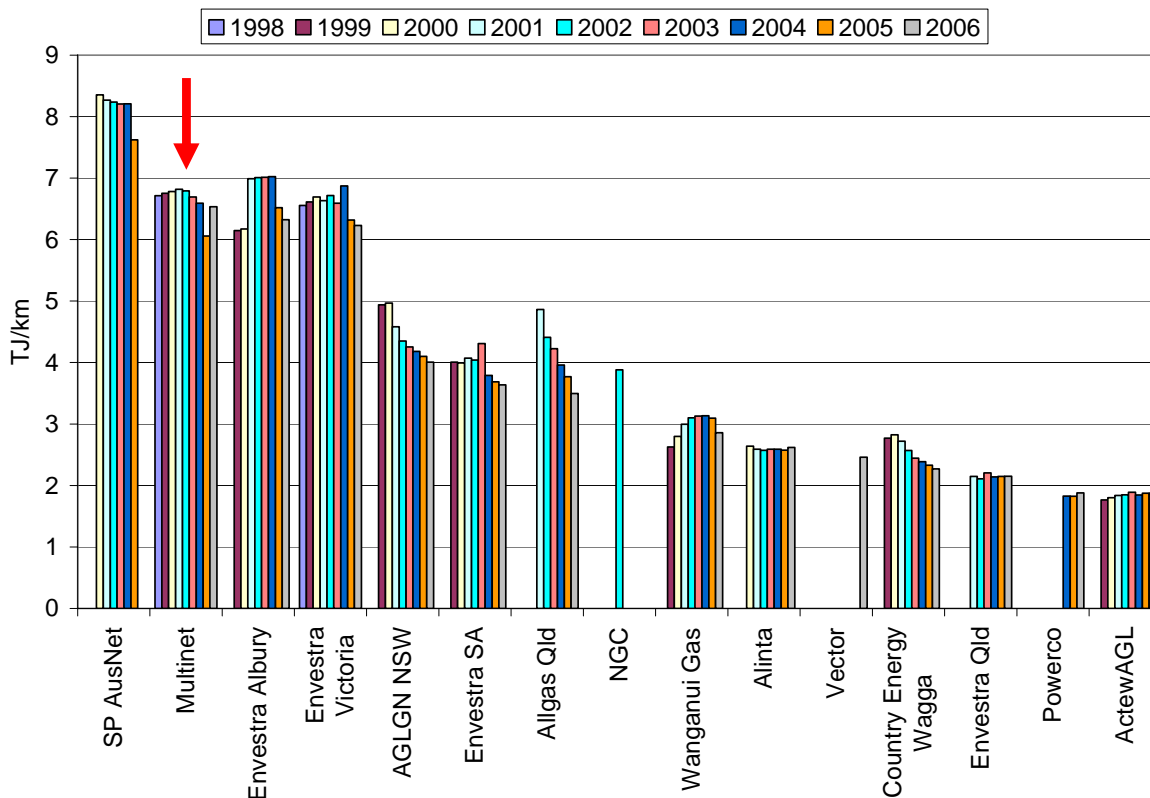


Source: Meyrick and Associates gas utility database

Multinet also has relatively high energy density per kilometre, with 6.53 TJ per kilometre compared to the sample average of 3.86 TJ per kilometre (Figure 3 and Table 1). Multinet’s energy density increased from 1998 to 2001 but has since declined. The dip in 2005 was due to the mild winter that year.

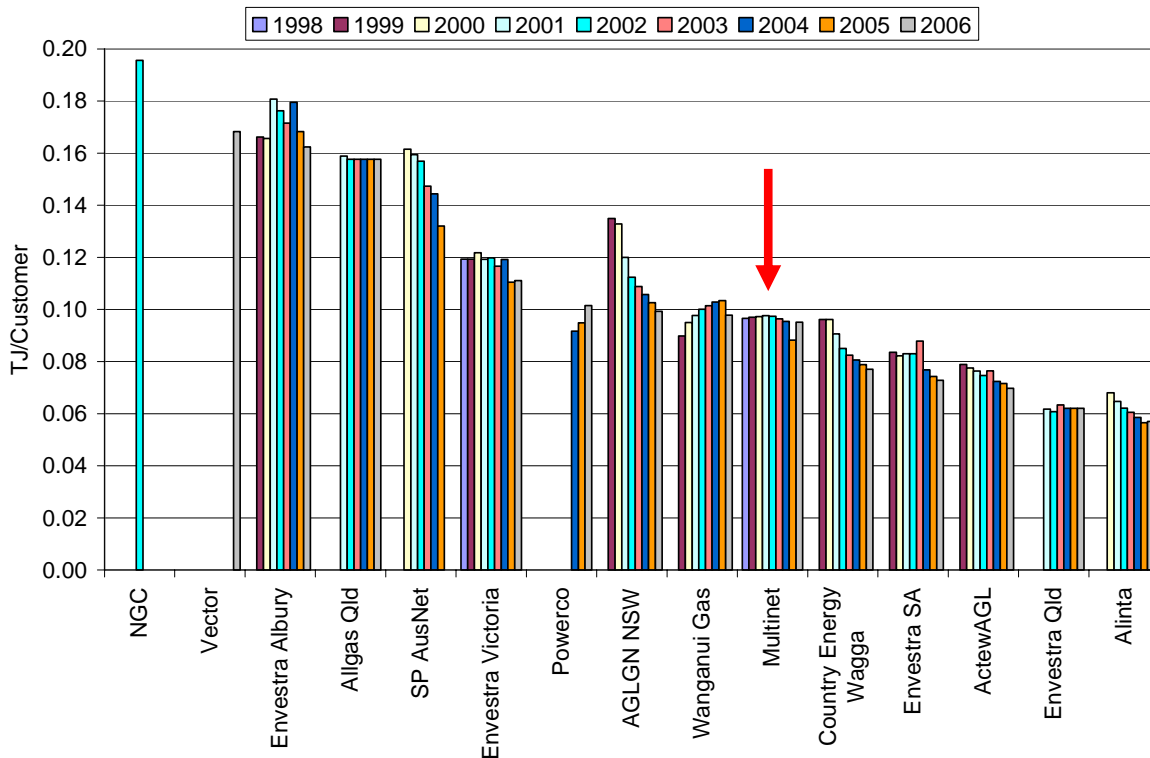
Multinet currently has below average energy density per customer for the 15 GDBs with around 0.095 TJ per customer compared to an average of 0.111 TJ per customer (Figure 4 and Table 1). Multinet’s energy density per customer rose from 1998 to 2000 but has since declined slightly.

Figure 3: Energy density per kilometre, 1998–2006



Source: Meyrick and Associates gas utility database

Figure 4: Energy density per customer, 1998–2006



Source: Meyrick and Associates gas utility database

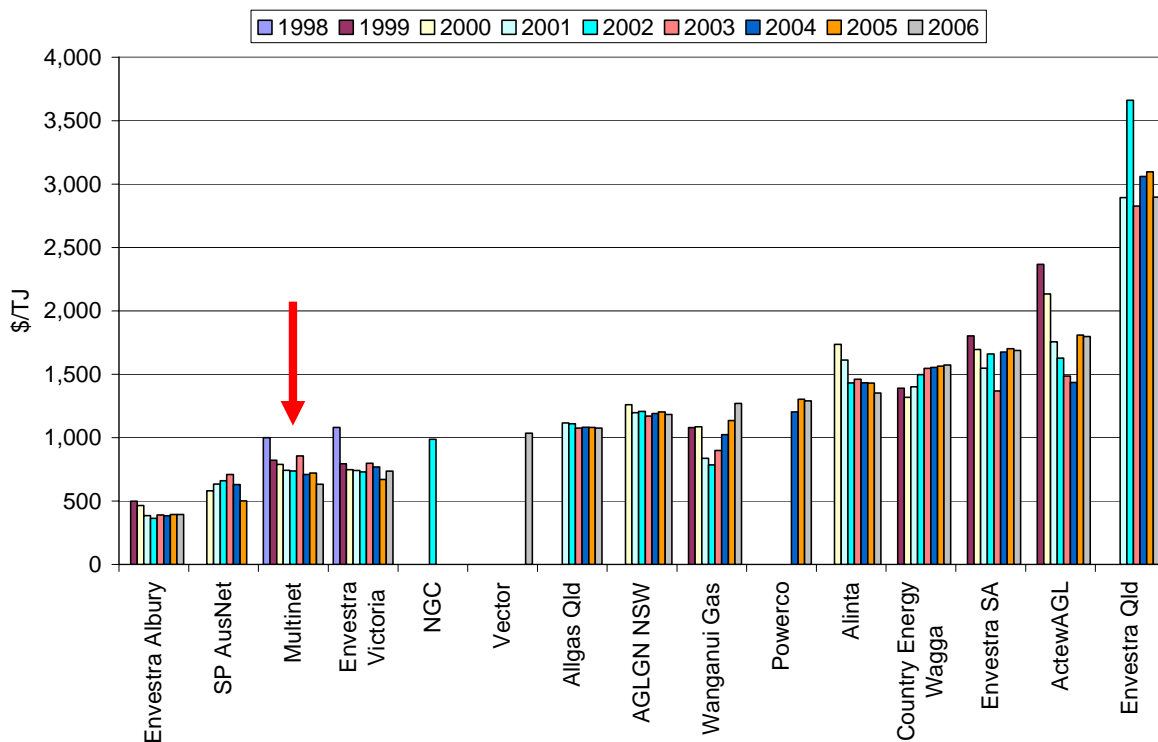
3.2 Operating and maintenance cost efficiency

The measure of operating cost covers regulated distribution activities only and excludes all capital costs. It includes all non–capital costs allowed by the regulatory authorities, including directly employed labour costs, contracted services, materials and consumables, administration costs and overheads associated with operating and maintaining the distribution service. All of the data are expressed in \$A 2006 prices.

There are a number of ways of looking at the partial productivity of all non–capital inputs combined. The method chosen to normalise operating costs will have an important bearing on the relative performance of GDBs. For instance, normalising operating costs by the system’s throughput in TJ will tend to favour those GDBs with dense networks and high consumption per customer. Conversely, examining the total costs of operating and maintaining the distribution network per kilometre of line will typically tend to favour GDBs with a less dense network because they have a higher number of network kilometres per customer by which to deflate the operating cost figure.

The impact of reporting comparative non–capital costs using different normalisations is presented in presented in Figures 5 to 7 and Table 1.

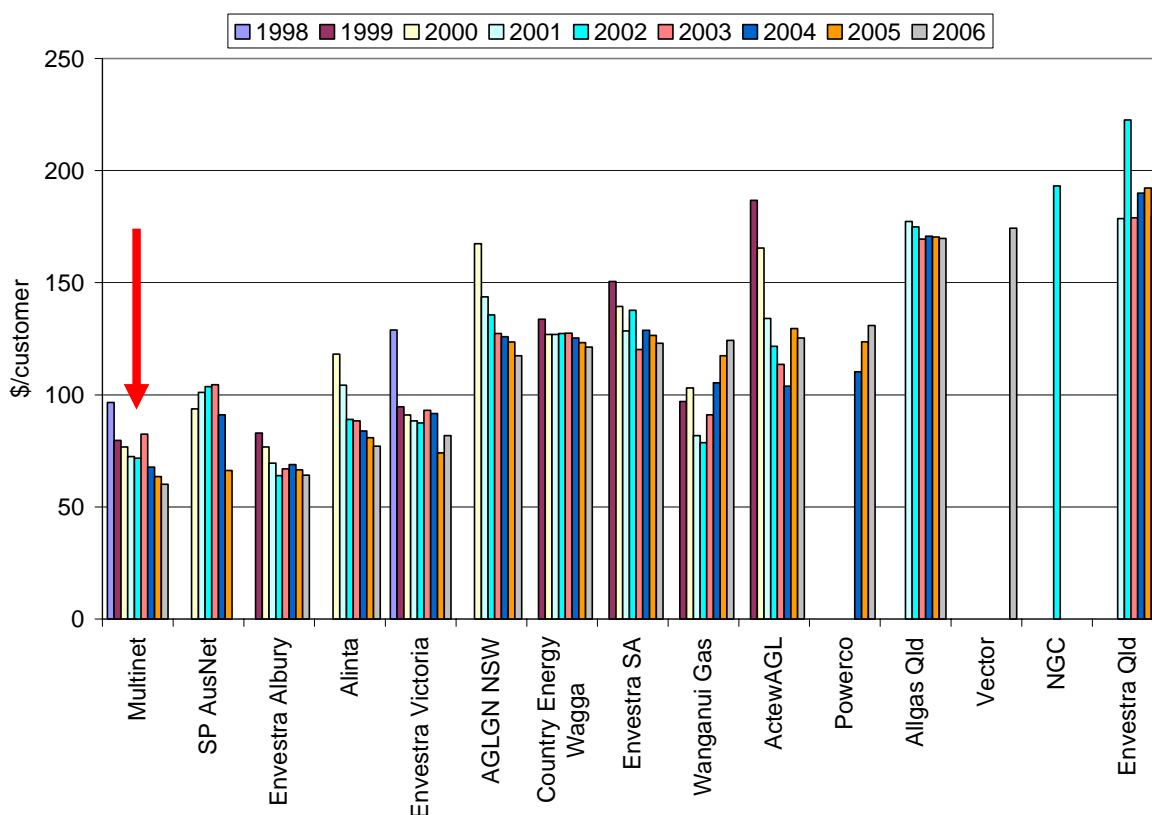
Figure 5: **Non–capital costs per TJ, 1998–2006**



Source: Meyrick and Associates gas utility database

Multinet has relatively low non-capital costs per TJ (Figure 5 and Table 1), ranking third in terms of this measure in 2006 and exhibiting significant improvement over the 9 year period. Multinet’s relatively high energy density per kilometre will help it perform well on this measure but its relatively low energy density per customer would disadvantage it on this measure, all else equal. Multinet has achieved a decline in non-capital costs per TJ nearly 4 times larger than the average annual percentage decline for the companies in the study. Its non-capital costs per TJ were \$632 compared to an average of \$1,228 in 2006. All of the Victorian GDBs performed relatively well on this measure.

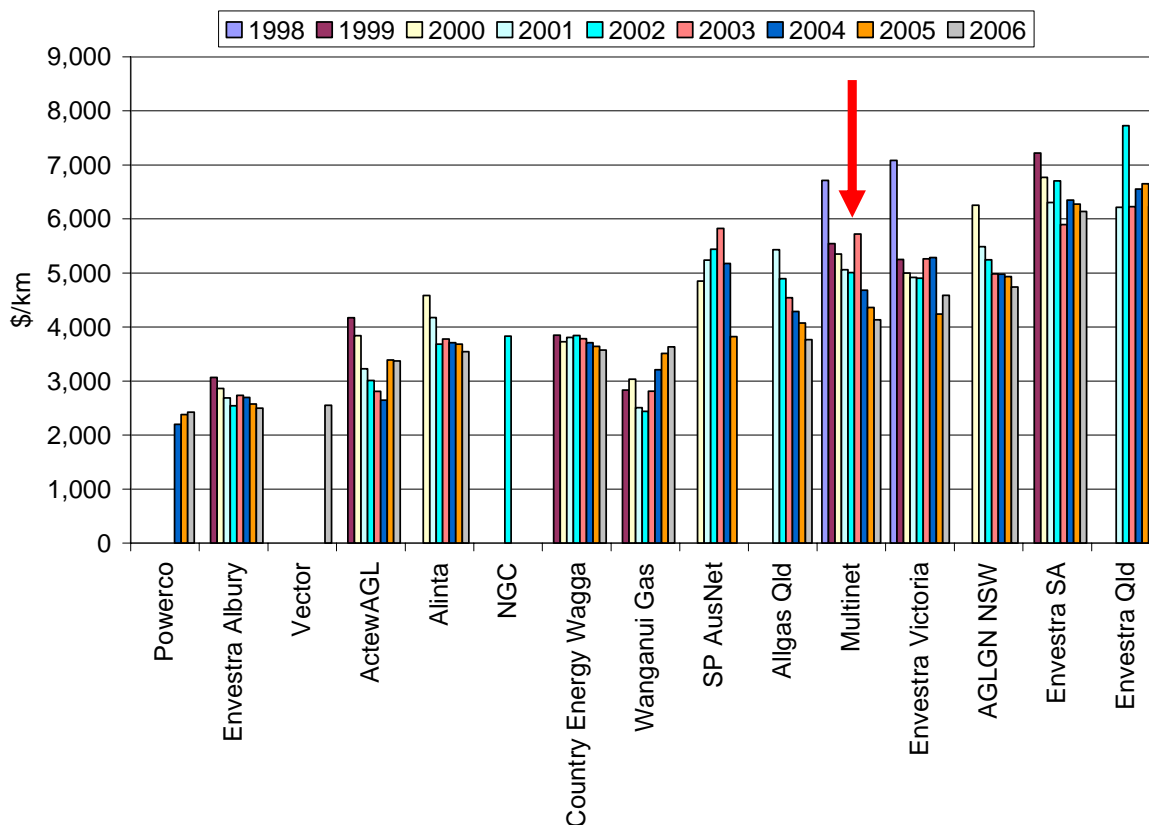
Figure 6: Non-capital costs per customer, 1998–2006



Source: Meyrick and Associates gas utility database

In 2006 Multinet had the lowest non-capital costs per customer (Figure 6 and Table 1). While its relatively high customer density will assist it in this measure, Multinet has exhibited significant improvement over the period with a decline around 2.3 times as large as the average annual percentage decline for the companies in the study. Its non-capital costs per customer were \$60, around half the sample average of \$121 in 2006. All of the Victorian GDBs performed relatively well on this measure.

Figure 7: **Non-capital costs per kilometre, 1998–2006**



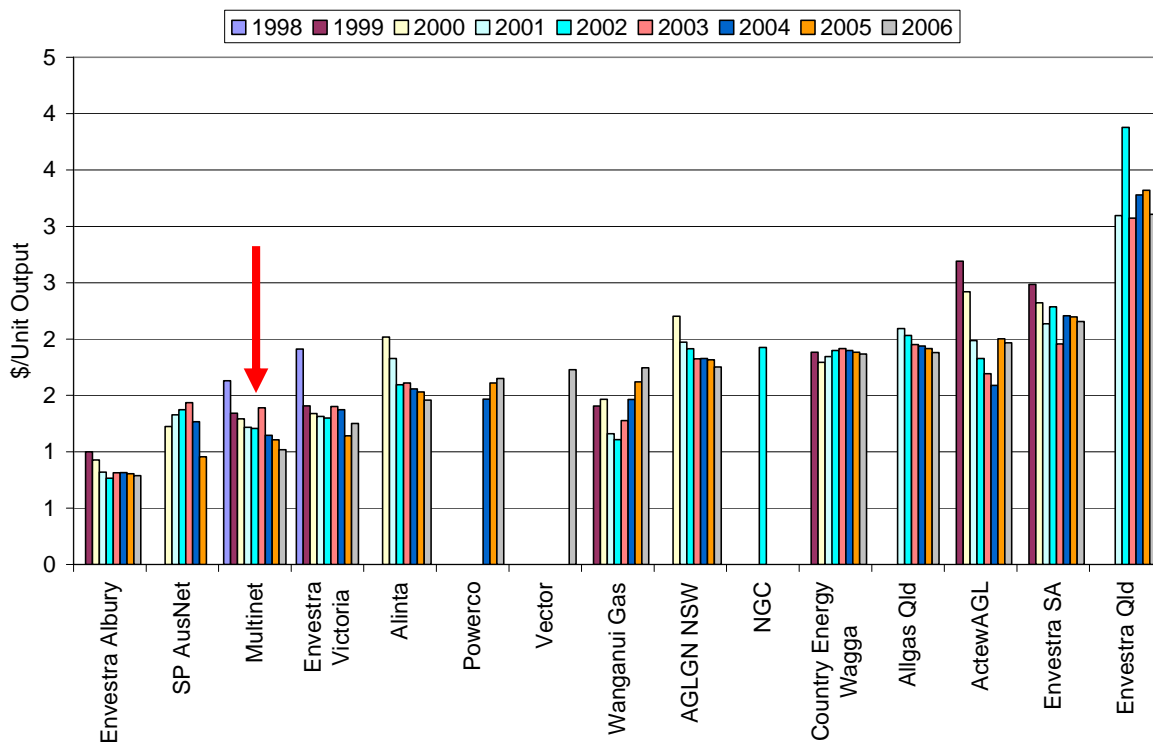
Source: Meyrick and Associates gas utility database

Multinet’s non-capital costs per kilometre are higher than average with a figure of \$4,133 per kilometre compared to an average of \$3,923 per kilometre in 2006 (Figure 7 and Table 1). However, it has experienced a significant decline in non-capital costs per kilometre over the period, with a fall around 2.4 times as large as the average annual percentage decline for the companies in the study. The small and non-urban based GDBs generally perform well on this measure reflecting their lower customer densities. Urban systems with high customer densities will be disadvantaged on this measure. Multinet, Envestra Victoria and AGLGN NSW have similar performance, with Multinet performing better in recent years. This is despite Multinet having a high proportion of low pressure mains, including cast iron pipes which typically suffer more leaks and ingress of water requiring higher levels of opex per kilometre than high pressure mains. In 2005 around 31 per cent by length of Multinet’s mains were low pressure compared to only 17 per cent for Envestra Victoria and 19 per cent for SP AusNet (ESC 2006, p.38). Multinet had over twice the length of cast iron mains of the other two Victorian GDBs.

We can form an objective measure of GDB output which incorporates the three opex cost drivers examined so far – energy throughput, customer numbers and kilometres of mains – using multilateral index number methods. In Meyrick and Associates (2007) we present

aggregate output, aggregate input and total factor productivity (TFP) estimates using the multilateral translog index. This index provides a robust method for comparing levels as well as growth rates where we have time series, cross section data. For this report we have made two modifications to the multilateral output index reported in Meyrick and Associates (2007). Firstly, we replace the system capacity variable used in the earlier study with kilometres of mains and, secondly, we form output cost shares on the basis of opex rather than total costs. This has involved re-estimating the cost function reported in Meyrick and Associates (2007). Using the detailed TFP database for the Victorian GDBs for the period 1998 to 2006 in Meyrick and Associates (2007) we find output opex shares of 37.9 per cent for throughput, 41.5 per cent for customer numbers and 20.6 per cent for kilometres of mains.

Figure 8: Non-capital costs per unit output, 1998–2006



Source: Meyrick and Associates gas utility database

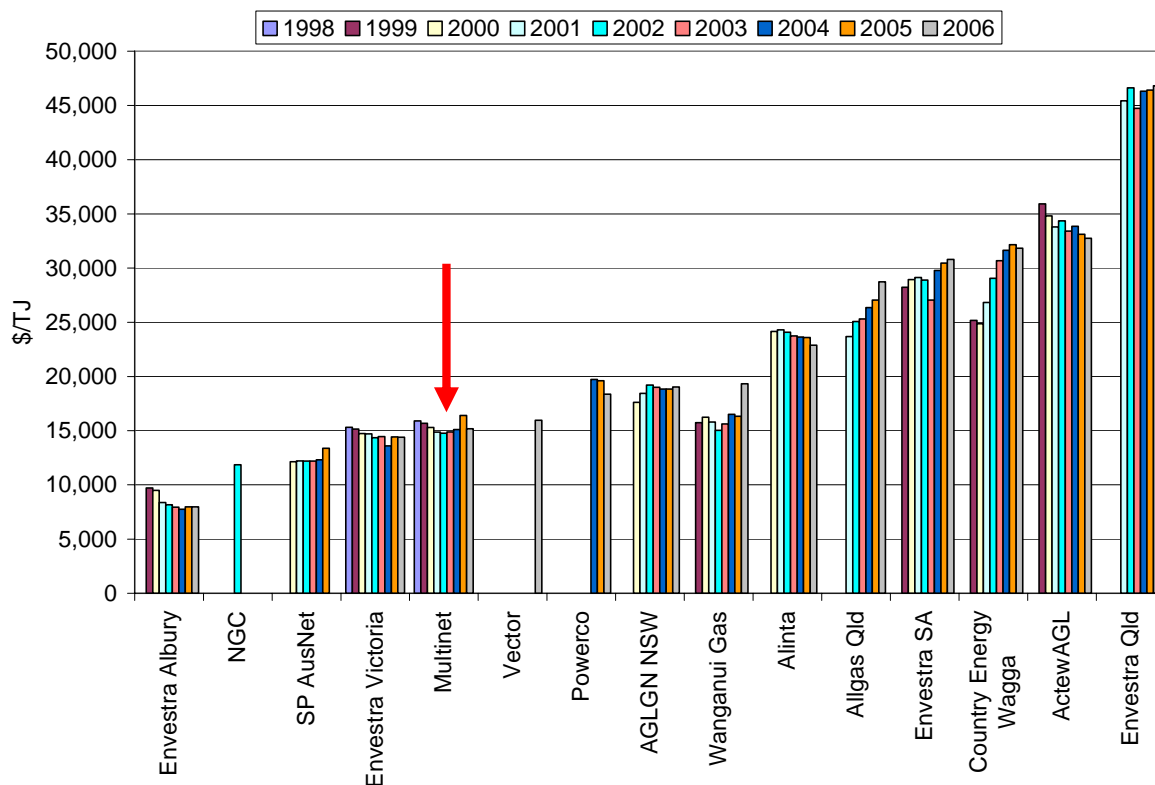
In figure 8 we present the real opex per unit output (or inverse partial productivities) formed using the multilateral index. Using this comprehensive measure of opex efficiency Multinet was the third most efficient Australasian GDB in 2006. This compares to it being the most efficient using the customer numbers driver alone, third most efficient using the throughput driver alone and eleventh most efficient using the kilometres of mains driver alone. Multinet thus performs very well in comparisons of non-capital costs despite having high proportions of low pressure and cast iron mains.

3.3 Capital stock efficiency

The estimates of the capital stock used in this section are based on depreciated optimised replacement cost or, in the case of New Zealand GDBs, the analogous concept of optimised deprival value in \$A 2006. While it would be preferable to use an undepreciated replacement cost measure to abstract from differences in average asset age, data on replacement costs are generally not available in the public domain. Consequently, differences in average asset age will play a role in the resulting capital stock efficiency comparisons.

Just as there are a number of ways of looking at opex efficiency, the efficiency of the use of the capital stock can also be examined in analogous ways, with the method chosen to normalise capital stock values again having an important bearing on the relative performance of GDBs. We look at the same three bases for normalising capital stock values as for operating expenditure in Figures 9 to 11.

Figure 9: Capital stock values per TJ, 1998–2006

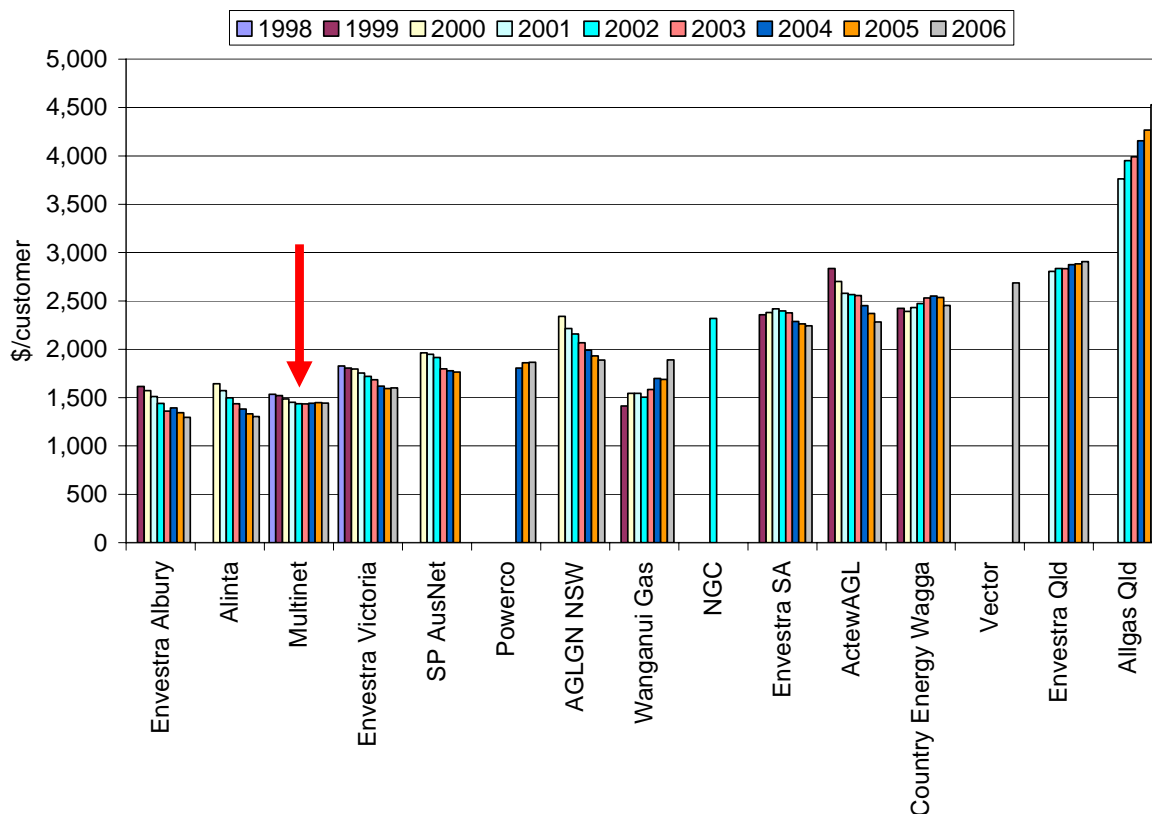


Source: Meyrick and Associates gas utility database

Multinet has relatively low capital stock values per TJ (Figure 9 and Table 1). Multinet’s capital stock values per TJ ranked fifth in 2006 and were \$15,180 compared to a sample average of \$21,953. While Multinet’s relatively high customer and energy densities per kilometre will advantage it on this measure, its below average energy density per customer will tend to disadvantage it. Multinet’s capital stock values per TJ experienced a decline over

the period 1998 to 2002 and a small increase in recent years. However, values were still well below average in 2006 and the average decrease over the period 1998 to 2006 contrasted with an increase for the sample on average. The other Victorian GDBs also performed well on this measure.

Figure 10: Capital stock values per customer, 1998–2006



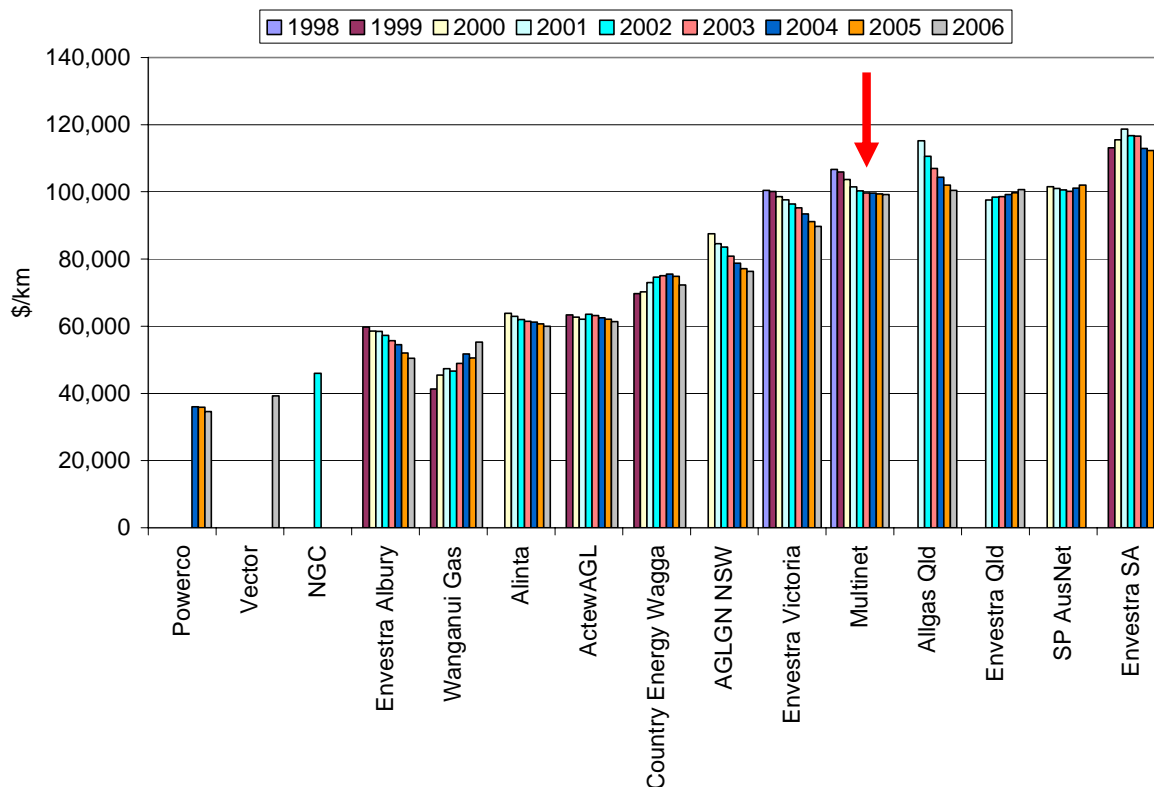
Source: Meyrick and Associates gas utility database

Multinet also has relatively low capital stock values per customer (Figure 10 and Table 1), ranking third on this measure. Multinet’s capital stock values per customer were \$1,444 compared to a sample average of \$2,165 in 2006. Again, Multinet’s relatively high customer density will tend to advantage it on this measure. Multinet’s capital stock values per customer experienced a slight increase in recent years. However, values were still well below average in 2006 and Multinet’s average annual growth rate of –0.8 per cent for this measure was slightly less than the sample average growth rate of –0.6 per cent. The other Victorian GDBs also performed well on this measure but had higher capital stock values than Multinet.

As expected, the rural based and less dense urban based GDBs dominate the capital stock values per kilometre series presented in Figure 11 and Table 1. Multinet has above average capital stock values per kilometre in line with its high customer density, although costs have declined over the period at a higher average rate than the sample average growth rate. Multinet’s capital stock values per kilometre were \$99,183 compared to a sample average of

\$73,302 in 2006. The other Victorian GDBs also had higher than average costs for this measure with Envestra Victoria being lower than Multinet and SP AusNet being higher than Multinet.

Figure 11: Capital stock values per kilometre, 1998–2006



Source: Meyrick and Associates gas utility database

Overall, Multinet performs relatively well in comparisons of capital stock values with rankings of third among the Australian GDBs on the per customer basis and fourth on the per TJ basis. Despite having the highest customer density, four GDBs have higher capital stock values per kilometre than Multinet.

3.3 Capital expenditure comparisons

As well as efficiency in using capital stocks (presented in the previous section), regulators are also typically interested in capital expenditure relativities across GDBs. Capital expenditure requirements can arise from a range of sources including:

- meeting demand growth (new connections and increased average consumption per customer);
- replacement of depreciated and damaged assets;
- initiatives to improve the reliability and quality of performance;

- compliance with new regulations, including environmental requirements; and
- demand management initiatives.

Comparisons of capital expenditure are more difficult to interpret than either operating expenditure or capital stock comparisons as different GDBs will face different demand growth rates, have systems of differing age and construction with older systems requiring more replacement capital expenditure, and have different reliability performances which may or may not be considered adequate to meet customer expectations and valuations. Given these considerations, comparisons of capital expenditure need to be interpreted with caution.

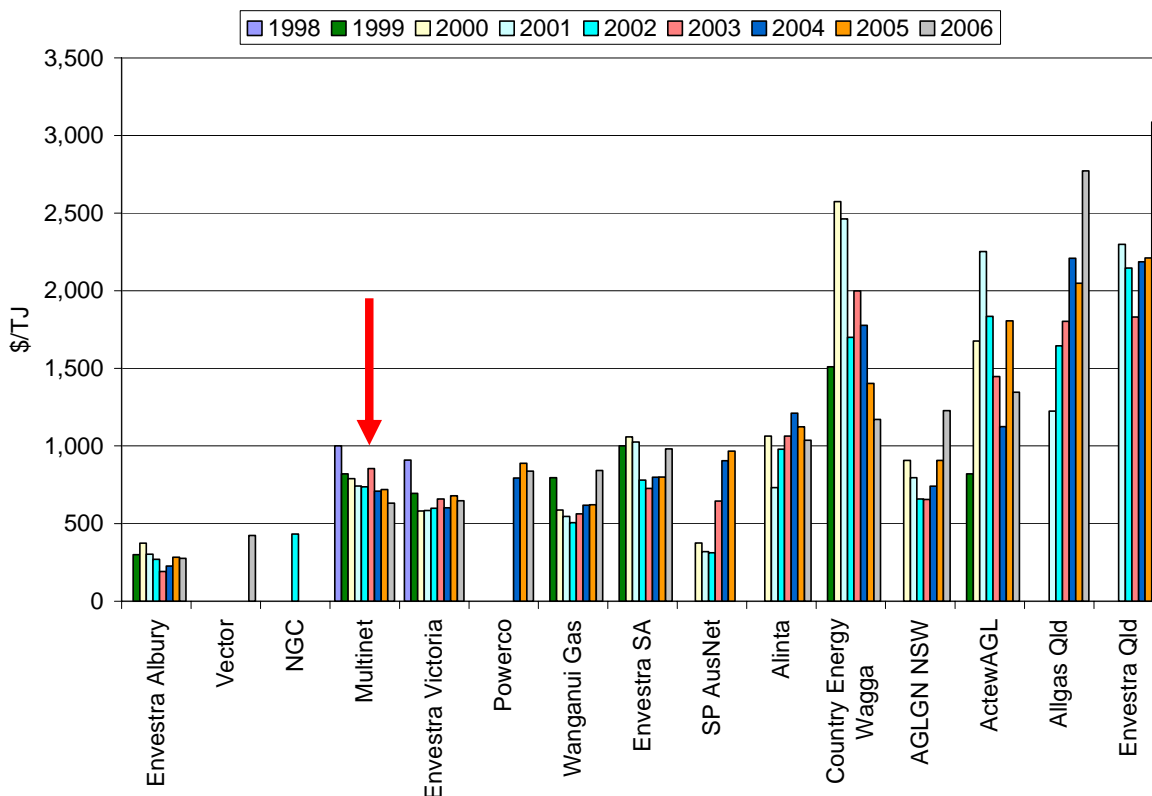
It is also less obvious how capital expenditures should be normalised when making comparisons. Capital expenditure net of depreciation is effectively the change in the size of the capital stock and could be normalised by, for example, the change in output. However, for the purposes of this exercise we normalise capital expenditures on the same bases as used for our operating expenditure and capital stock comparisons.

The impact of reporting comparative capital expenditure using different normalisations is presented in presented in Figures 12 to 14 and Table 1. The estimates of capital expenditure are in terms of net capital expenditure (after allowing for customer contributions) in \$A 2006.

Multinet has relatively low capital expenditure per TJ (Figure 12 and Table 1). In 2006 it ranked fourth and its capital expenditure per TJ was \$632 compared to an average of \$1,112 for the sample. Furthermore, it has exhibited a substantial decline in capital expenditure per TJ over the 9 year period, while on average capital expenditure per TJ for GDBs in the sample has risen markedly. All the Victorian gas GDBs performed well on this measure, although SP AusNet has recorded a considerable increase in recent years from a relatively low base in the 2000–02 period.

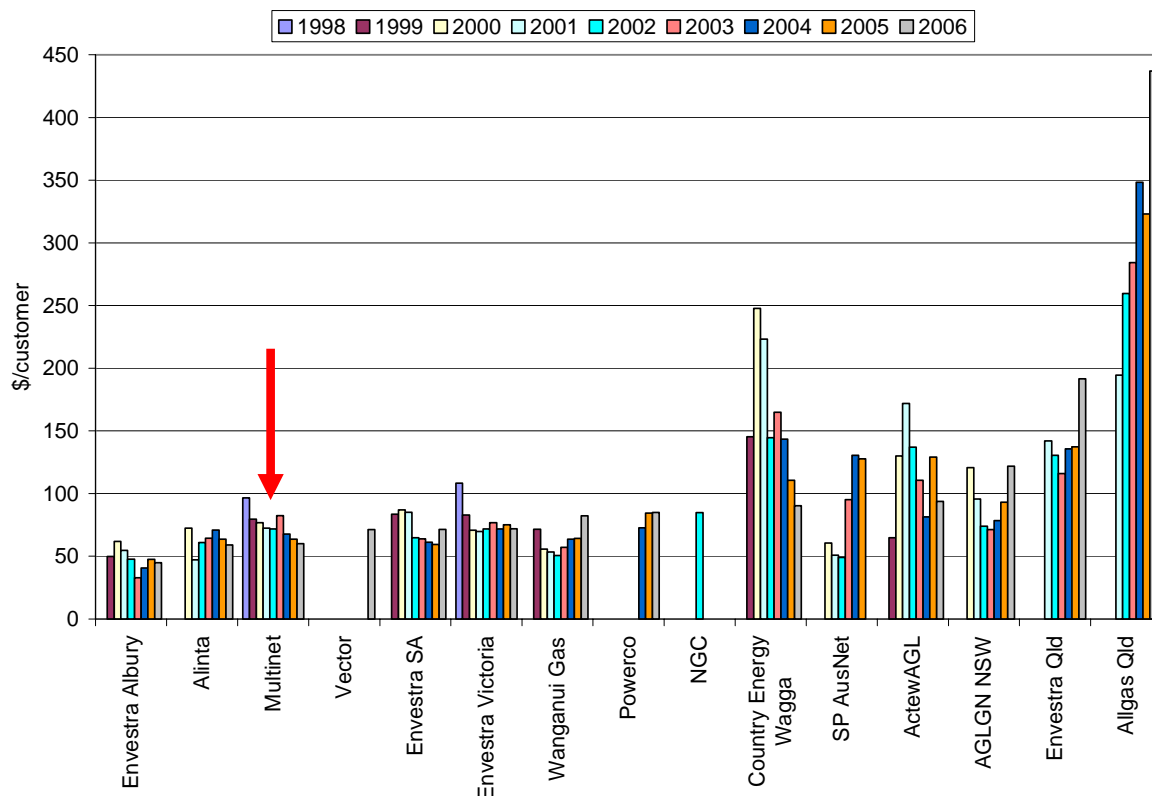
Multinet also has relatively low capital expenditure per customer (Figure 13 and Table 1). In 2006 Multinet ranked third and its capital expenditure per customer was \$60 compared to an average of \$113 for the sample. While Multinet's relatively high customer density will advantage it on this measure, it has also exhibited a substantial decline in capital expenditure per customer over the period at the same time that average capital expenditure per customer for GDBs in the sample has risen noticeably. Multinet also has lower capital expenditure per customer than the other two Victorian GDBs.

Figure 12: Capital expenditure per TJ, 1998–2006



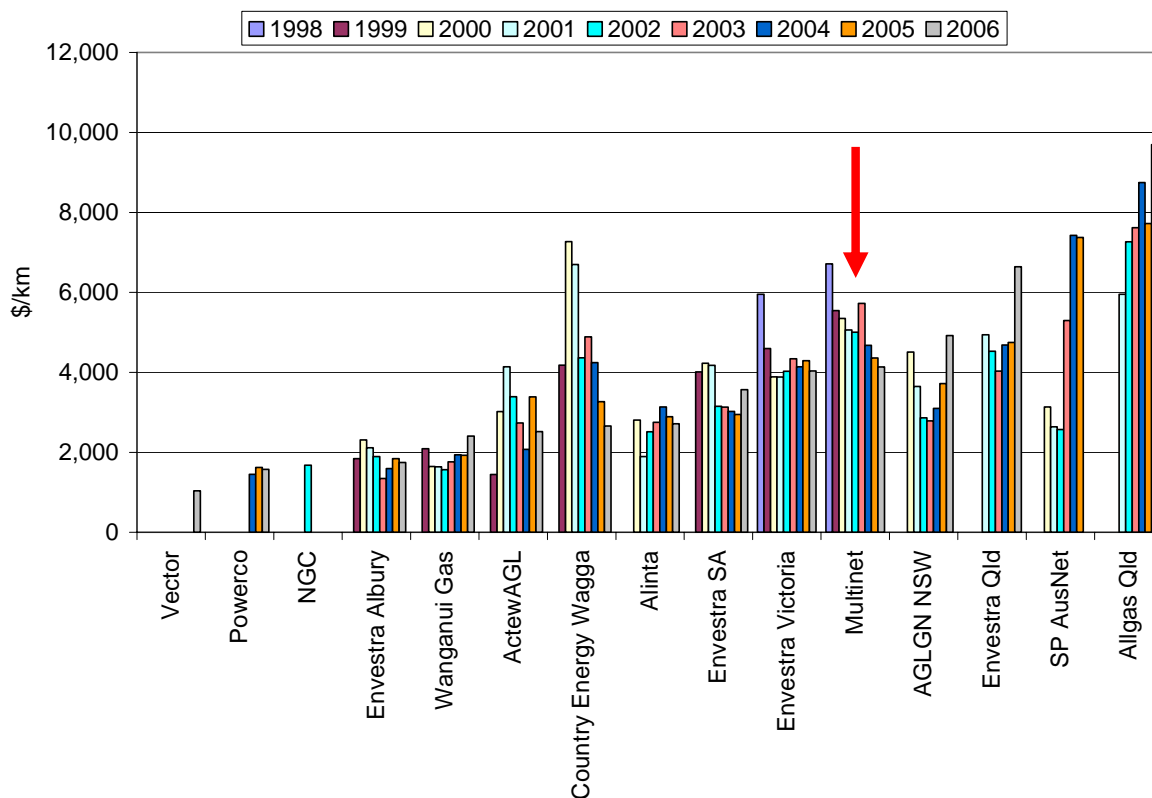
Source: Meyrick and Associates gas utility database

Figure 13: Capital expenditure per customer, 1998–2006



Source: Meyrick and Associates gas utility database

Figure 14: Capital expenditure per kilometre, 1998–2006



Source: Meyrick and Associates gas utility database

Multinet has relatively high capital expenditure per kilometre but a substantial decline has been achieved over the 9 year period, while on average capital expenditure per kilometre for GDBs in the sample has risen noticeably (Figure 14 and Table 1). In 2006 Multinet’s capital expenditure per kilometre was \$4,133 compared to an average of \$3,781 for the sample. All the Victorian GDBs had relatively high capital expenditure per kilometre, in part reflecting their relatively high customer density.

It should be recognised that the Victorian gas distribution network is a relatively old system and that residual low pressure parts of the network require ongoing replacement. This particularly applies to Multinet which has a higher proportion of cast iron mains remaining in its network (17.9 per cent compared to 9.1 per cent for Envestra Victoria and 9.8 per cent for SP AusNet) (ESC 2006, p. 37).

It is noticeable that the New Zealand GDBs (whose systems are relatively young) and the relatively small non-urban focussed Envestra Albury had the lowest capital expenditures per kilometre.

Overall, Multinet performs relatively well on capital expenditure comparisons ranking second among the Australian GDBs on the per TJ basis and third on the per customer basis. It had the fifth highest capital expenditure per kilometre but this figure will be influenced, in

part, by Multinet's high customer density and, like the other two capex performance indicators, it has fallen markedly in recent years.

3.6 Conclusion

Based on the indicators presented and recognising the nature of its network, Multinet has performed well on most indicators. The performance relative to the sample average and over time for non-capital costs has been particularly impressive, considering that Multinet has a high proportion of cast iron and other low pressure mains. Multinet continues to have relatively low capital stock values per TJ and per customer. It has above average capital stock values per kilometre as is the case for all Victorian GDBs reflecting their high customer densities. Overall, Multinet is the third most efficient Australasian GDB when the three principal non-capital cost drivers are combined. Multinet has relatively low capital expenditure per TJ and per customer and capital expenditure has declined over the period for all measures.

The relative performance of Multinet can also be assessed in terms of the average annual indicator growth rate over the period 1998 to 2006 (Table 1). Despite experiencing a decline in each density measure, Multinet performed substantially better than average in terms of growth rates for all the non-capital expenditure and capital expenditure measures, as well as capital stock values per TJ, and somewhat better than average in terms of capital stock values per kilometre and per customer.

ATTACHMENT A: LETTER OF RETAINER



321 Fernree Gully Road
Mount Waverley Vic 3149
Australia

5 January 2007

Attention: Denis Lawrence
Director - Economics
Meyrick and Associates
6 Kurundi Place
Hawker ACT 2614

Dear Denis

Multinet Gas – 2008-2012 Access Arrangement Revision – Stage 1

Multinet Gas (Multinet) is required to submit a revised Access Arrangement on 30 March 2007. As part of this review Multinet is required to submit a forecast of costs for the 2008 – 2012 period inclusive.

The Essential Services Commission (the Commission) has issued Consultation Paper No1 and No2 for the purposes of providing the businesses with guidance.

You are asked to prepare partial indicator comparisons for Australia and New Zealand gas distribution businesses;

Specifically a comprehensive and consistent a database as possible for ANZ using publicly available information. The principal data sources for Australia will be final Access Arrangement Information (AAI) filings, associated regulator decisions, regulator performance monitoring reports and company annual reports and other website information. The principal data sources for New Zealand will be the Disclosure Data filings of the gas distribution businesses and company annual reports and other website information. A long as possible time series of consistent information for each included gas distribution business is required. Comparisons will include (but not be limited to) opex, capex, capital stock and total cost (where available) per km of mains, per GJ sold and per customer. Energy and customer densities, proportions of cast iron pipes and other operating environment characteristics that help explain Multinet's positioning on each of the benchmarks is also required.

A full report is required that fully documents the methodology used in detail and discusses the results obtained. They must be suitable for submission to the Commission if Multinet chose to use them in this way.

As a result of comments made by the Commission in Consultation Paper No 1, it is important for your report to comply with the Federal Court Guidelines for Expert Witnesses (attached).

Please read the attached Guidelines and ensure your report complies with the Code.

Summarise your experience and qualifications and attach your curriculum vitae.

Summarise your instructions and attach this letter of retainer.

In the introduction to the report, list the facts, matters and assumptions on which your opinion is based and the source of those facts, matter and assumptions.

Acknowledge that you have read the Guidelines.

List all reference material and information on which you have relied.

Multinet Gas (DB No. 1) Pty Ltd (ABN 66 086 026 886), Multinet Gas (DB No. 2) Pty Ltd (ABN 57 086 230 122)
trading as Multinet Gas Distribution Partnership (ABN 53 634 214 009)

Identify any person and their qualifications, who assists you in preparing the report or in carrying out any research or test for the purposes of the report.

Include detailed reasons for your opinion.

Provide a summary of your opinions.

List any limitations, incomplete matters or qualifications to your opinion.

At the end of your report, you should include a declaration that you have read the attached Guidelines and that you *"have made all inquiries I believe are desirable and appropriate and that no matters of significance which I regard as relevant have, to the best of my knowledge, been withheld."*

We look forward to hearing from you.

Yours faithfully



Andrew Schille
Access Arrangements & Pricing Manager

ATTACHMENT B: CURRICULUM VITAE

Denis Lawrence

Director, Meyrick and Associates

6 Kurundi Place
Hawker ACT 2614
Australia
TEL +61 2 6278 3628
Email: denis@meyrick.com.au



For the past 20 years Dr Denis Lawrence has played a leading role in the regulation, benchmarking and performance measurement of infrastructure enterprises. He has advised Australian and overseas regulators and utilities on a wide range of quantitative and strategic issues in the energy, telecommunications, post and transport sectors.

Denis' consulting projects include advising the New Zealand Commerce Commission on the implementation of a leading-edge productivity based regulatory regime for electricity distribution; advising Australian electricity and gas distribution businesses on productivity measurement issues and their regulatory implications; advising the Commerce Commission on gas network benchmarking and regulation; reviewing the work of Australian regulators for utilities; advising the Australian Competition and Consumer Commission on incentive regulation in electricity supply; and, advising the Queensland Competition Authority on service quality incentives.

Denis has also advised electricity regulators and utilities in Canada, Saudi Arabia and Hong Kong.

Denis has developed a quantitative framework for calculating the distribution of benefits from a firm's productivity improvements among the key stakeholder groups of customers, employees and shareholders. He has applied this framework for leading telecommunications and transport firms.

Denis joined Meyrick and Associates in 2001. Prior to that Denis was Director of Tasman Economics' Canberra office and held senior executive positions in the Australian Bureau of Industry Economics and the Australian Industry Commission.

Denis holds a PhD in Economics from the University of British Columbia, Canada, and a BEc (Hons) from the Australian National University.

Recent Projects

- Total factor productivity modelling and benchmarking of gas distribution businesses
- Construction of total factor productivity models for electricity distribution businesses
- Advising the NZ Commerce Commission on the regulation of key gas distribution companies
- Critique of total factor productivity modelling of electricity distribution in Victoria undertaken by the Essential Services Commission and assessment of regulatory implications
- Econometric modelling of the operating and maintenance expenditure efficiency of electricity distributors taking operating environment differences into account
- Examining the effects of changes in the terms of trade and productivity growth on national welfare
- Advice to regulators and utilities in Canada, Hong Kong and Saudi Arabia on electricity tariff setting, incentive regulation and best practice pricing principles
- Benchmarking study of the operating and capital expenditure performance of 13 of Australia's 15 electricity distributors
- Total factor productivity modelling of the efficiency and profitability of electricity lines businesses for the NZ Commerce Commission
- Development of service quality incentive schemes for electricity distributors.

ATTACHMENT C: DECLARATION

I, Denis Anthony Lawrence, Director of Meyrick and Associates, declare that I have read the Federal Court Guidelines for Expert Witnesses and that I have made all inquiries I believe are desirable and appropriate and that no matters of significance which I regard as relevant have, to the best of my knowledge, been withheld.



Denis Anthony Lawrence

28 March 2007

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