GasNet Australia Access Arrangement - Submission

Annexure 11 - VENCorp Energy Networks Corporation, Annual Planning Review 2002-2003, November 2001

Annual Gas Planning Review

2002 to 2006

Victorian Energy Networks Corporation

November 2001

Reliances

VENCorp has relied on the currency, accuracy and completeness of data and forecast information provided by gas industry *Participants* for the purposes of this review. VENCorp has not independently audited or verified the data or information provided by *Participants* but has reviewed it for reasonableness and consistency. Where VENCorp formed the view that the data or information provided by a *Participant* was not reasonable or consistent, VENCorp contacted the *Participant* for assistance to rectify the matter.

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Acknowledgments

VENCorp acknowledges the support, co-operation and contributions from all *Participants* in providing the data and information used in the development of this planning review.

EXECUTIVE SUMMARY

Introduction

This Annual Planning Review (APR) is an independent planning study prepared by VENCorp covering the period 2002 to 2006. It is a *Statement of Opportunities* for the future development of the gas transmission system, gas storage facilities and gas supplies within the Victorian Gas Market.

The planning information is provided for the primary purpose of allowing *Participants* to make informed decisions relating to:

- planning for capital investments;
- developing market strategies;
- system maintenance;
- gas storage;
- pipeline operation; and
- market pricing strategies.

The information presented includes:

- a review of demand and supply-demand in 2001;
- annual and monthly forecasts of gas loads and peak demands at the system and regional level including gas cogeneration and gas power generation scenarios;
- reported available and prospective gas supply by supply source;
- inventory and capacity of gas storage facilities, LNG and TXU UGS at Iona;
- supply and pipeline developments;
- the supply-demand outlook;
- committed new system infrastructure;
- modelled transmission system capacity; and
- an assessment of the adequacy of transmission system capacity.

Monthly planning information is also provided for 2002 with a focus on the impact of planned system maintenance and plant outages on supply-demand. Monthly forecasts are also used to ascertain that plant outages due to proposed system maintenance do not present a material threat to system security.

It should be noted that while VENCorp is required to provide planning information to the gas industry, it is not VENCorp's role to act on this information.

Review of Supply-Demand in 2001

Annual Demand

Annual system demand[1] is projected to be 191.0 PJ for 2001, some 6.5% under the 2000 forecast of 204.1 PJ. The corresponding temperature corrected demand is 199.7 PJ as 8.6 PJ (4.3%) of the variance is attributable to reduced gas heating in another very mild winter. The residual forecast error of 4.3 PJ (2.2%) is due to an unexpected contraction in the industrial chemicals sector and lack of growth paper sector. A forecast 4 PJ reduction in the Non-Metallic minerals sector did occur with the closure of Adelaide Brighton Cement at Geelong in June.

Demand from gas power generation in 2001 is projected to be 13 PJ, comparable to that in 2000.

Cumulative withdrawals into the Underground Gas Storage (UGS) facility at Iona over summer 2000/2001 reached 8.4 PJ and were supplemented by additional gas processed directly from Otway fields. Withdrawal rates up to 90TJ/d occurred and storage inventory exceeded 10 PJ prior to winter 2001.

Over summer 2000/01 net exports through the NSW Interconnect at rates of up 30 TJ/d amounted to about 1 PJ.

Peak Day Demand

System demand peaked at 1002TJ in August including 49TJ for gas power generation. The temperature corrected 1 in 2 peak day for 2001 was 1,038 TJ[2], 2.2% under the forecast of 1,061 TJ. The variance is associated with larger than expected contractions in the industrial sector prior to winter 2001.

Supply 2001

Longford remains the predominant source of supply meeting almost 99% of system demand directly or indirectly over 12 months. In the May to September period some 8% of supply was provided by UGS and imports from NSW. UGS injections exceeded 100 TJ/d on several occasions reaching 188 TJ/d whilst NSW imports ranged up to 39 TJ/d.

LNG was used on one occasion to maintain falling pressures.

Supply-Demand 2001

There was adequate supply and system capacity to meet peak demand throughout 2001.

[1] Demand includes the Western Transmission System but excludes gas power generation, exports and summer withdrawals into storage.

[2] The 1 in 2 peak day forecast does not include power generation or exports.

Economic Growth Scenarios

Following a tender process, VENCorp engaged the National Institute of Economic and Industry Research (NIEIR) to prepare three sets of long term annual gas demand forecasts based on medium, high and low economic growth scenarios. Each economic scenario comprised projections of Gross State Product (GSP), population, dwellings, real household disposable income, gas prices, and CPI. The GSP forecasts for each scenario are shown in Table 1.

Table 1 Victorian Gross State Product Scenarios

Year Ending June 30	Low	Medium	High
2001	2.0%	2.0%	2.0%
2002	0.7%	2.4%	3.4%
2003	0.5%	2.6%	3.7%
2004	2.7%	3.5%	4.3%
2005	2.1%	3.2%	4.1%
2006	2.3%	2.7%	3.8%
2007	1.8%	3.2%	4.2%

The State economic growth for year 2001 was subdued due to a fall in business and construction activity following introduction of the GST and the slowdown in Australia's major trading partners.

The immediate future remains uncertain. There is a possibility that the Australian GDP growth pattern may diverge from the US growth pattern in the medium term over 2001/02 and 2002/03 although historically the economic growth patterns of these countries are strongly correlated. NIEIR has noted that the probability of the low growth scenario over the next 2 years has increased following the terrorist attacks on 11 September.

Under the medium scenario, growth remains subdued through 2002 and 2003 but picks up by 2004. In the low scenario, recessions in all major trading partners leads to stagnation of the economy with very little growth in 2002 and 2003 before a very modest recovery in 2004. In the high scenario growth picks up with little impact from recent World events.

Long Term Gas Forecasts

Demand forecasts were derived from separate forecasts for the residential, commercial and industrial market sectors for each economic scenario. The industrial forecasts took into account planned expansions or reductions reported in a survey of very large gas customers.

The EDD weather standard used in gas forecasts was revised in 2001 following analysis of the urban warming trend in Melbourne. This change has reduced forecasts of gas heating load by over 2 PJ per year compared to forecasts published last year.

The load forecasts from 2001 to 2016 for each economic scenario are shown in Table 2 and charted in Figure 1. These forecasts include gas cogeneration but do not include gas power generation which is considered separately.

Table 2 Long Term Gas Forecasts (TJ)

Calendar Year	Low Scenario	Medium Scenario	High Scenario
2001	197,504	197,504	197,504
2002	195,406	199,861	204,149
2003	196,904	204,408	213,186
2004	200,392	211,615	225,714
2005	202,943	218,517	237,605
2006	204,325	222,385	244,583
2010	214,156	242,060	280,940
2016	230,094	272,809	344,699
CAGR 2001-2006	0.7%	2.4%	4.4%
CAGR 2006-2016	1.2%	2.1%	3.5%

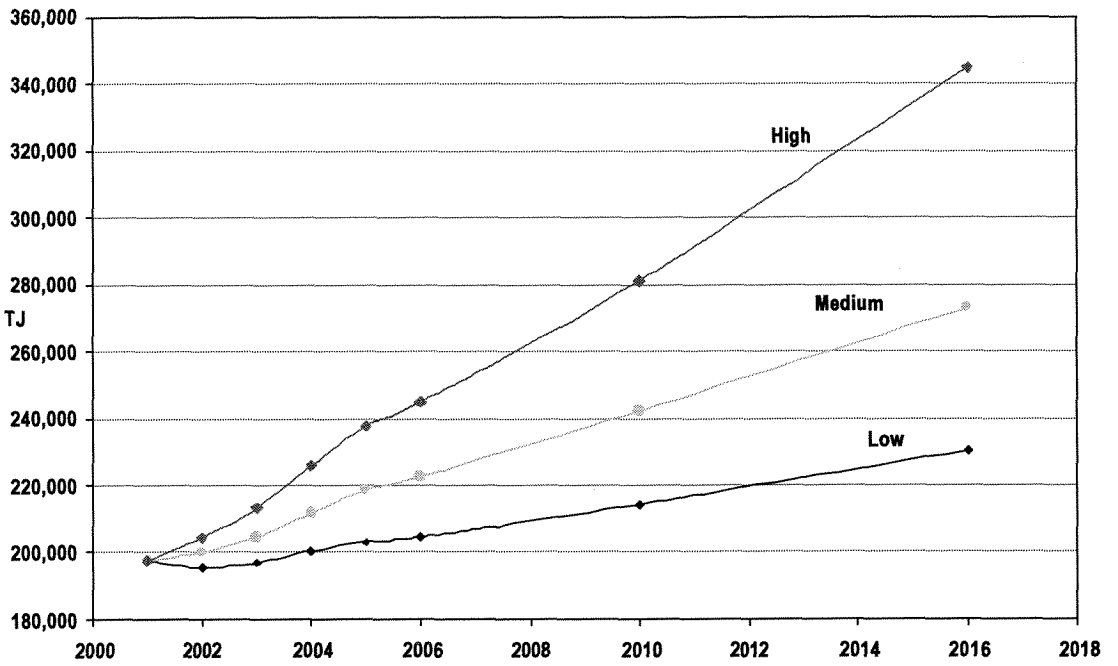

Figure 1 Long Term Gas Forecasts

Under the medium scenario, demand grows from about 197.5 PJ (temperature corrected) in 2001 to 222.4 PJ in 2006 at an average rate of 2.4% per annum. The low scenario sees further contraction in annual demand to 195.4 PJ in 2002 followed by very moderate growth to 204.3 PJ in 2006 with growth

at just 0.7% per annum over the period. The high scenario sees load growing to 244.6 PJ by 2006 with growth averaging 4.4% driven by gas cogeneration expansion.

These medium scenario forecasts are about 6 PJ lower than equivalent forecasts published in 2000. This is due to the unexpected contraction in the industrial sector of around 4 PJ previously mentioned while a revision of the EDD weather standard used in forecasts accounts for another 2.2 PJ.

Gas Cogeneration

Gas cogeneration is a significant growth area in the industrial and commercial sectors. The load projections for each economic scenario shown in Table 3 are included in the system demand forecasts above. Under the medium scenario gas cogeneration is projected to grow from the estimated current level of about 6 PJ to about 16 PJ in 2006. The forecasts include scheduled[3] gas cogeneration.

Table 3 Forecast Gas Cogeneration (TJ)

Calendar Year	Low Scenario	Medium Scenario	High Scenario
2001	6,199	6,199	6,199
2002	6,624	6,856	7,319
2003	7,029	7,414	8,186
2004	7,527	11,127	14,512
2005	8,266	14,998	20,981
2006	9,253	16,233	22,717

Gas Power Generation

Forecast demand for gas power generation is generally treated separately because of the volatility and potentially very large volume of this load. Given the large number of gas power generation projects proceeding and in the planning stage, it is appropriate to provide indicative forecasts and assess the adequacy of the gas transmission system to meet such loads.

VENCorp electricity demand forecasts and assumptions on a range of causal factors and competing projects have been used to prepare the indicative gas power generation load forecasts shown in Table 4. The forecast loads shown in Table 4 are over and above the general load forecasts presented earlier.

In the medium scenario gas power generation grows from about 13 PJ in 2001 to almost 16 PJ in 2006. The reduction in the medium scenario in 2002 is attributable to additional operations required to cover significant baseload generator outages in 2001.

[3] Scheduled cogeneration has capacity >30 MW and must be scheduled in the electricity market.

Table 4 Forecast Gas Power Generation (TJ)

Calendar Year	Low Scenario	Medium Scenario	High Scenario
2001[4]	*12,972*	*12,972*	*12,972*
2002	7,140	11,501	12,773
2003	6,945	12,206	13,915
2004	7,189	14,276	17,349
2005	7,938	15,015	19,576
2006	9,561	15,895	21,843

Planning Forecasts 2002 to 2006

Regional Forecasts

The medium scenario forecasts are used for planning purposes. Forecasts are produced for defined System Withdrawal Zones. The Melbourne zone has about 70% of system demand.

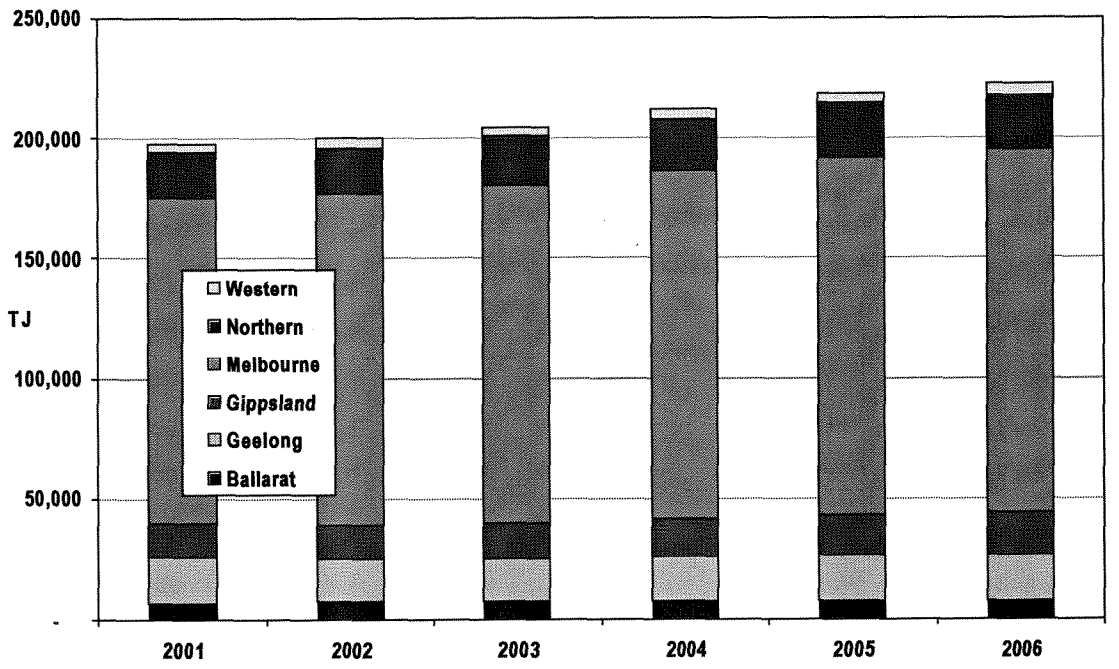

Figure 2 Annual Gas Forecasts by region

[4] Estimated actual load for 2001

Peak Day Demand Forecasts

The system 1in 20 winter peak day forecasts that are used as the planning standard for supply-demand analysis are based on the medium economic growth scenario. 1in 20 peak day forecasts have a 5% probability of exceedence in a given year. The forecasts are shown in Table 5.

Table 5 Forecast Peak Day Demand (TJ)

Calendar Year	1 in 2 Peak Day	1 in 20 Peak Day
2001	1,038	1,117
2002	1,051	1,131
2003	1,075	1,157
2004	1,107	1,191
2005	1,139	1,225
2006	1,161	1,249

The 1 in 2 peak day is the most probable peak day demand and has a 50% probability of exceedence in a given year.

Gas power generation is not included in peak day forecasts but is considered in the supply-demand analysis.

The Supply-Demand Outlook

Adequacy of System Capacity

Pressures and flows in gas transmission system have been modelled extensively for scenarios based on available and prospective supplies and forecast demand including gas power generation.

The transportation capacity from each injection point exceeds the available supply for 2002 to 2006 as illustrated for 2002 in the Table 6.

The modelled system capacity of 1280 TJ/d without LNG and 1410 TJ/d with LNG is adequate to meet forecast 1 in 20 winter peak demand which grows from 1117 TJ in 2002 to 1249 TJ in 2006. Surplus capacity is available for gas power generation.

Table 6 Adequacy of System Capacity 2002 (TJ)

Injection Point	Pipeline Capacity	Available Supply 2002
Longford	990	830
Culcairn	50	28
Iona	275	265
LNG	150	150
System w/o LNG[5]	1,280	1,123
System with LNG[6]	1,410	1,273

It is noted that the underground gas storage (UGS) facility at Iona has had its capacity revised to 250 TJ/d following testing in 2001. In addition, toll processing capacity of gas from other Otway fields at Iona is available and some 15 TJ/d has been contracted in 2002.

Peak Day Supply-Demand

Figure 3 depicts the supply-demand outlook for 1 in 20 and 1 in 2 winter peak day scenarios based on available supplies reported by *Participants*.

In 2002, supply is adequate to meet 1 in 20 winter peak demand with surplus available for gas power generation. The current LNG contracts terminate in December 2002 but LNG is required to avoid 1 in 20 peak day supply-demand shortfalls ranging from 49 TJ in 2003 to 131 TJ by 2006. However, assuming LNG remains available to the market, supply will be adequate to meet peak demand.

Outside of winter, supply from Longford is generally adequate to meet additional demand from gas power generation, withdrawals into UGS and exports to NSW.

[5] The system capacity is not a simple aggregate of the injection point pipeline capacities.

[6] This level of capacity is theoretical and is pushing the system to the limit. It assumes forecast peak day load distributions. It is possible that restaging of Brooklyn compressors would be required to maintain pressures on the Ballarat Pipeline.

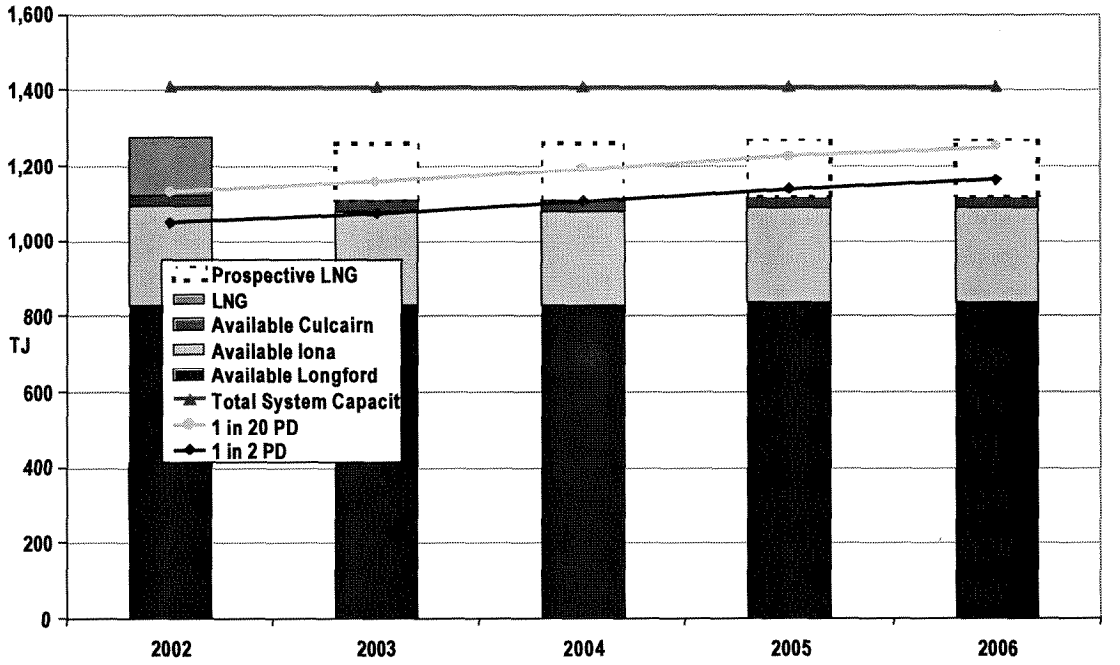

Figure 3 Peak Day Supply – Demand 2002 to 2006

Depletable Resources

UGS and LNG are vital supplies for the gas market. Supply-Demand analysis based on market bids from winter 2001 shows that LNG and, to a lesser extent, UGS, could be at risk of depletion in 2005 and 2006 if market bids do not reflect the scarcity of supply. In later years some additional MDQ from primary (non-depletable) supply points may be needed based on the scenarios analysed.

Longford Maintenance 2002

Exxon-Mobil has reported that maintenance scheduled for several days in January 2002 may result in capacity constraints at the Longford plant. Despite the reduction in capacity, VENCorp analysis indicates that there should be sufficient supply to meet demand during this period assuming that gas power generation is similar to that in recent years. However, under some higher demand scenarios, withdrawals into UGS and NSW exports may be constrained.

System Capacity Limitations

The system does not have sufficient capacity to meet 1 in 20 peak day demand in Northern Victoria while simultaneously meeting the potential authorised Murray Valley pipeline load and exports to NSW. Exports would be constrained unless unauthorised industrial load can be curtailed. Interconnect import supplies in winter remains a viable alternative to future system augmentation required to supply Northern Victoria.

Potential new gas peaker plant loads in the Ballarat, Geelong and Northern Victoria regions in the medium to long term would test system capacity and would require appropriate sizing.

It should be noted that efficient gas transmission at or near maximum capacity on peak demand days requires suitable beginning of day operating conditions and accurate scheduling. This in turn requires reasonably accurate daily demand forecasts and weather forecasts. Given surprise events such as unexpected weather changes alternative supplies such as LNG may have to be scheduled ahead of other supplies in order to manage system pressures.