



REQUEST FOR PROPOSALS
FOR
DEMAND MANAGEMENT OR LOCAL GENERATION
ON THE MID NORTH COAST

JUNE 2002

1. Introduction

The mid-north coast of New South Wales is one of the fastest growing areas in the state. The associated growth in demand for electricity is expected to result in the capacity of the 132 kV transmission system supplying the area being exceeded within approximately the next five years.

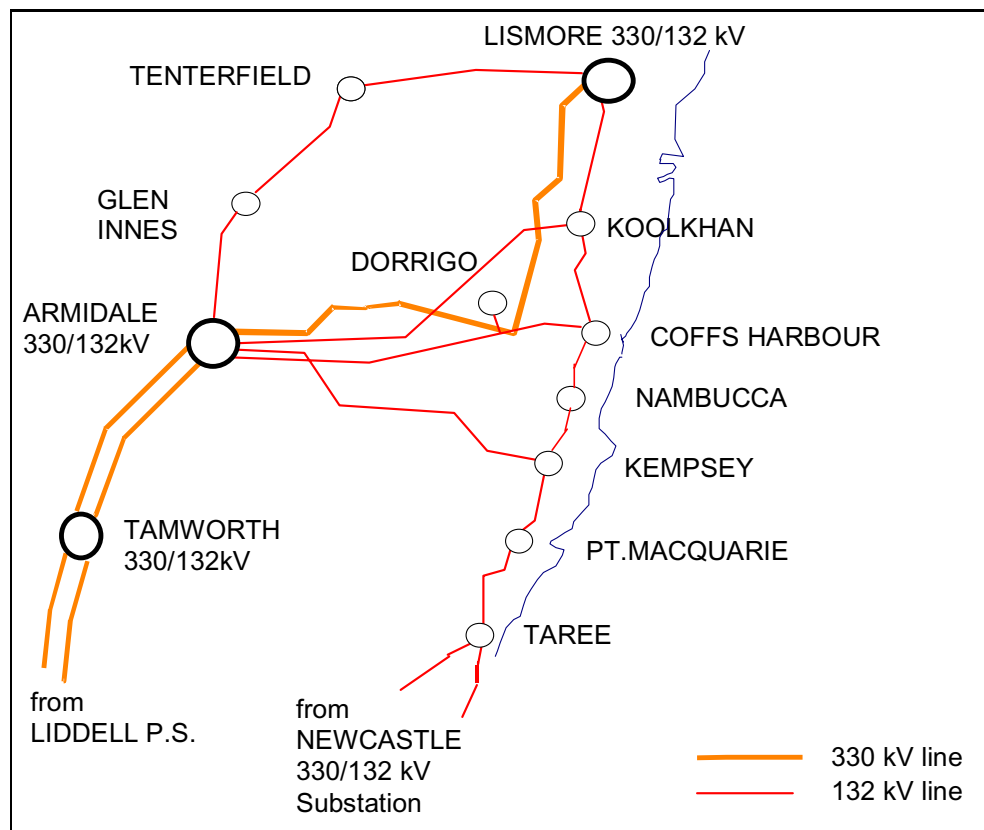
Consequently, TransGrid and Country Energy are seeking proposals for schemes which may reduce the maximum demands for electricity in the area.

2. The Electricity Network Supplying the Coffs Harbour to Port Macquarie Area

This area is supplied via a 132 kV transmission network emanating from 330/132 kV substations at Armidale, Lismore and Newcastle, as shown in Figure 1.

This 132 kV network supplies substations at Coffs Harbour, Kempsey and Port Macquarie, which in turn supply the lower voltage Country Energy networks in those areas. A new 132 kV line between Coffs Harbour and Kempsey and an associated 132/66 kV substation at Nambucca was commissioned in early June 2002.

Figure 1 Supply System on the Mid North Coast



The capacity of the existing 132 kV system is expected to be inadequate to meet the growing demands for electricity, with one line out of service, within approximately five years.

Within the network, there are two critical 132 kV lines:

1. The Armidale – Coffs Harbour line. This line is the primary supply for the Coffs Harbour area. When it is out of service, the capacity of the two remaining lines, one via Grafton (Koolkhan) and the other via Kempsey, may not be adequate at times of high demand. It is presently expected that this would occur from around 2005.
2. The Kempsey to Port Macquarie line. When this line is out of service, supply to Port Macquarie is provided from Newcastle, via Taree. The capacity of this system is also expected to be exceeded around 2005.

3. The Nature of the Demand for Electricity in the Area

The demand for electricity in the Coffs Harbour to Port Macquarie area is seasonal, with the highest demands occurring during winter. Summer maximum demands are typically around 80% of the winter maximum demands. Figure 2 below shows the maximum demands (averaged over a half hour period) for each day from 1 January 1999 to 23 June 2002.

Figure 2 Daily Maximum Demands for the Coffs Harbour to Port Macquarie Area

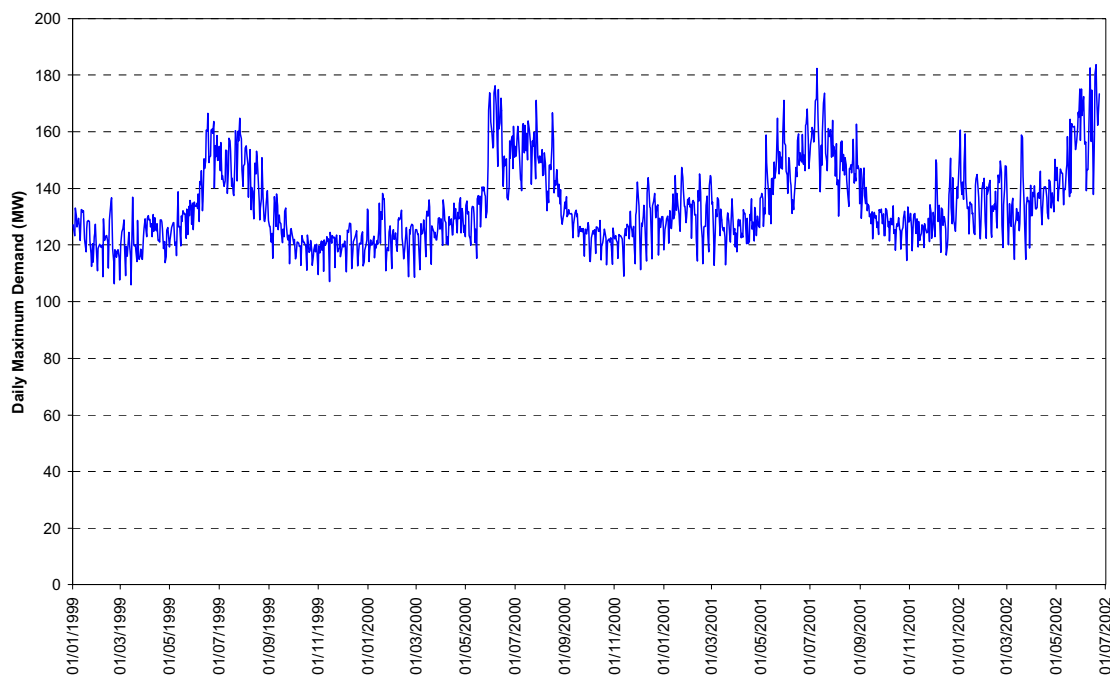
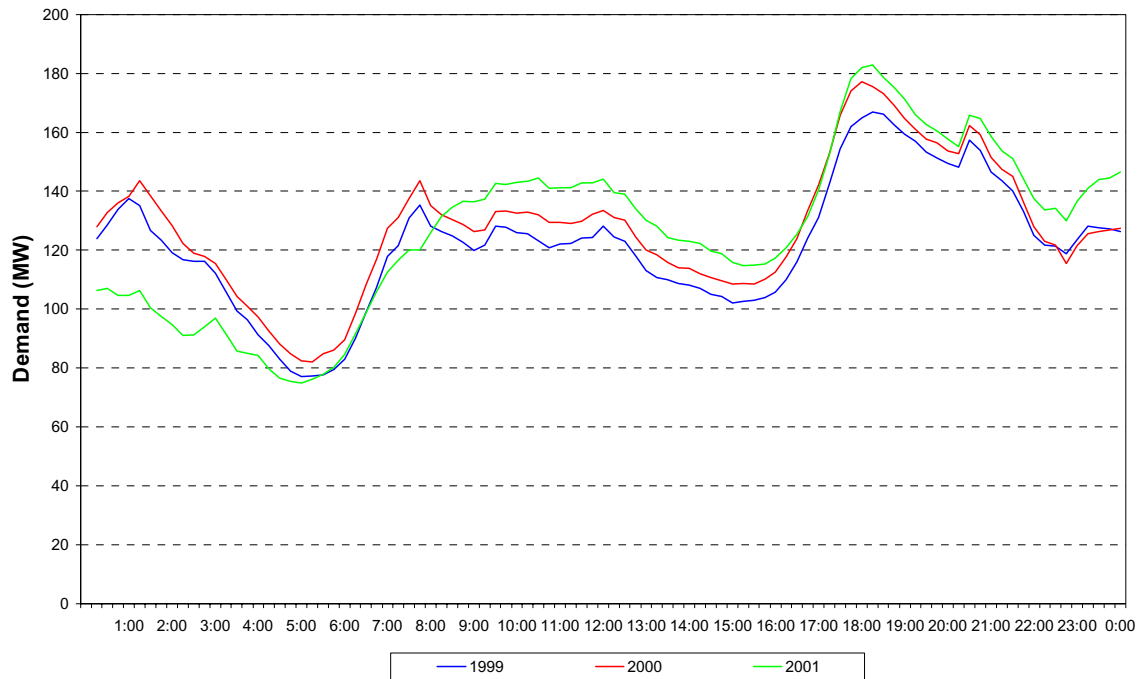


Figure 3 below shows the load on the days of maximum demand in 1999, 2000 and 2001. The impact of Country Energy's existing demand management (load control) system is clearly visible. Load has been shifted from the morning and the evening peaks to after the evening peak (from the period commencing about 7 am to the period commencing around 8 pm and extending through until the early hours of the morning).

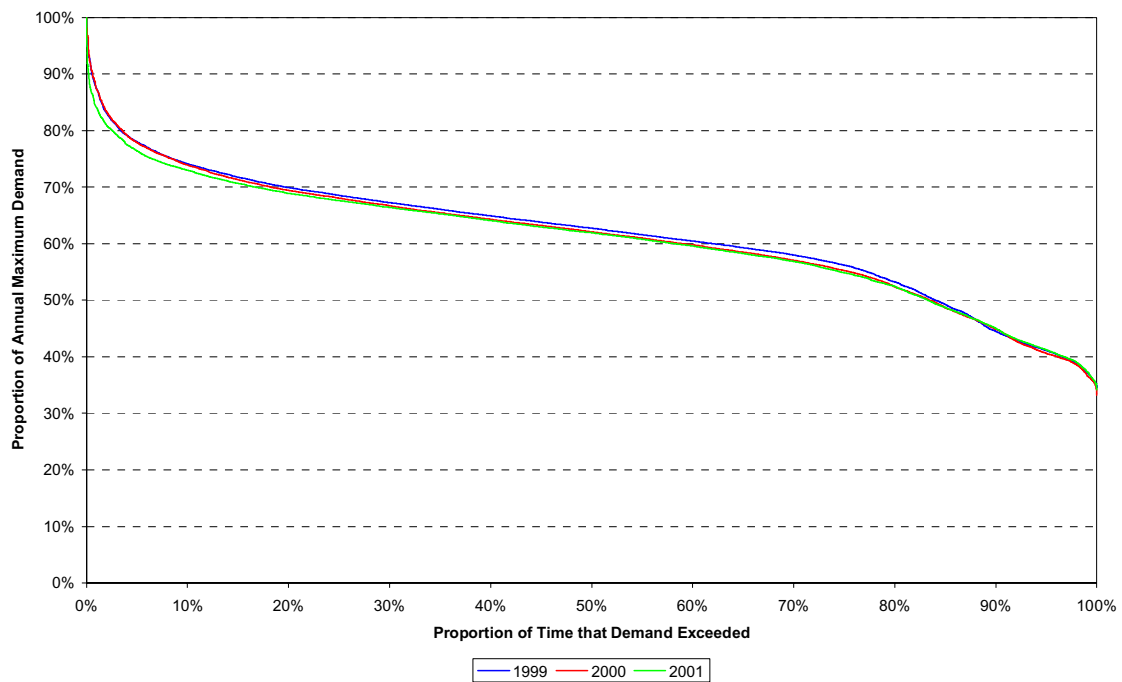
Figure 3 Load Profile on Day of Maximum Demand



The highest demands exist for only comparatively short periods. For example, demands above approximately 90% of the annual peak demand, occur primarily in “blocks” of two hours duration or less and those above approximately 95% of the annual peak demand, occur primarily in “blocks” of one hour duration or less.

Figure 4 shows the load duration curves for 1999, 2000 and 2001. These curves show the proportion of time that particular demands (expressed as a proportion of the maximum demand for that year) are exceeded.

Figure 4 Load Duration Curves for the Coffs Harbour to Port Macquarie Area



4. What Causes the Peak Demand?

As the highest demands occur during winter and are typically around 6:00 pm to 7:00 pm, it is likely that space heating and other domestic activities, such as cooking, are major contributors to those demands.

An inspection of the demand and Coffs Harbour ambient temperature data for the days of highest demand in 1999, 2000 and 2001 shows that:

- There is only a weak link between maximum demand and ambient temperature (as shown by the wide scattering of points in Figure 5 below).
- The highest demands tend to occur in June and July.
- The highest demands occur less frequently on Fridays, Saturdays and Sundays than on other days, suggesting different human activities on those days. The demand profile for the week of maximum demand in 2000 is shown in Figure 6 below.

Figure 5 Maximum Daily Demand as a Function of Daily Average Temperature

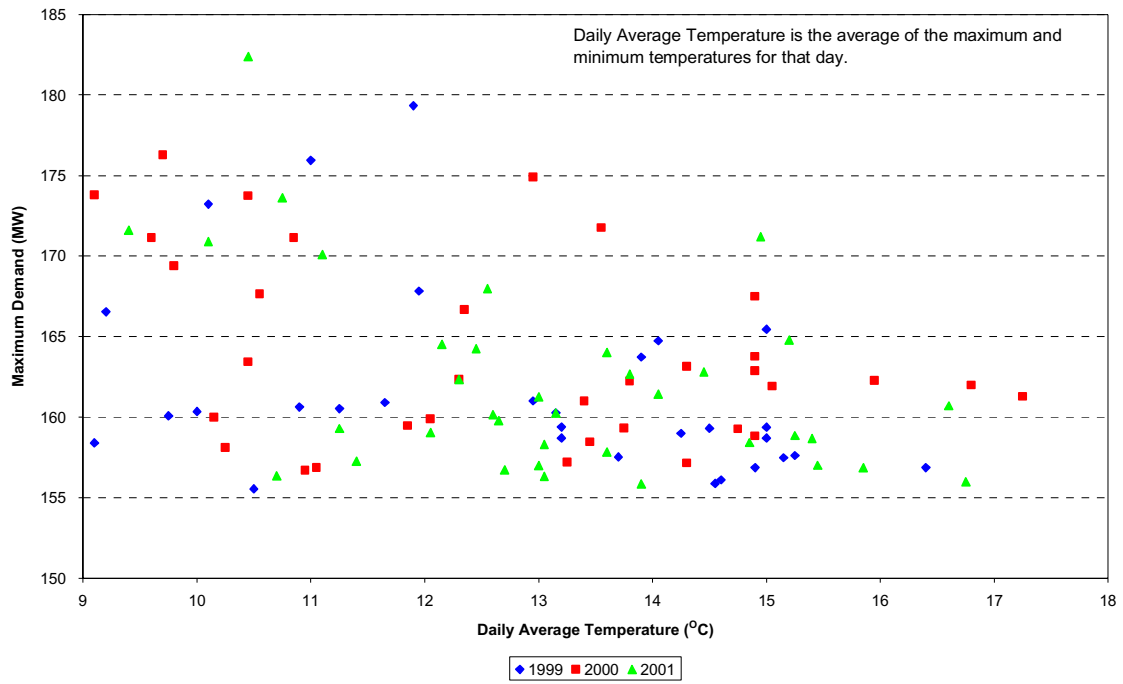
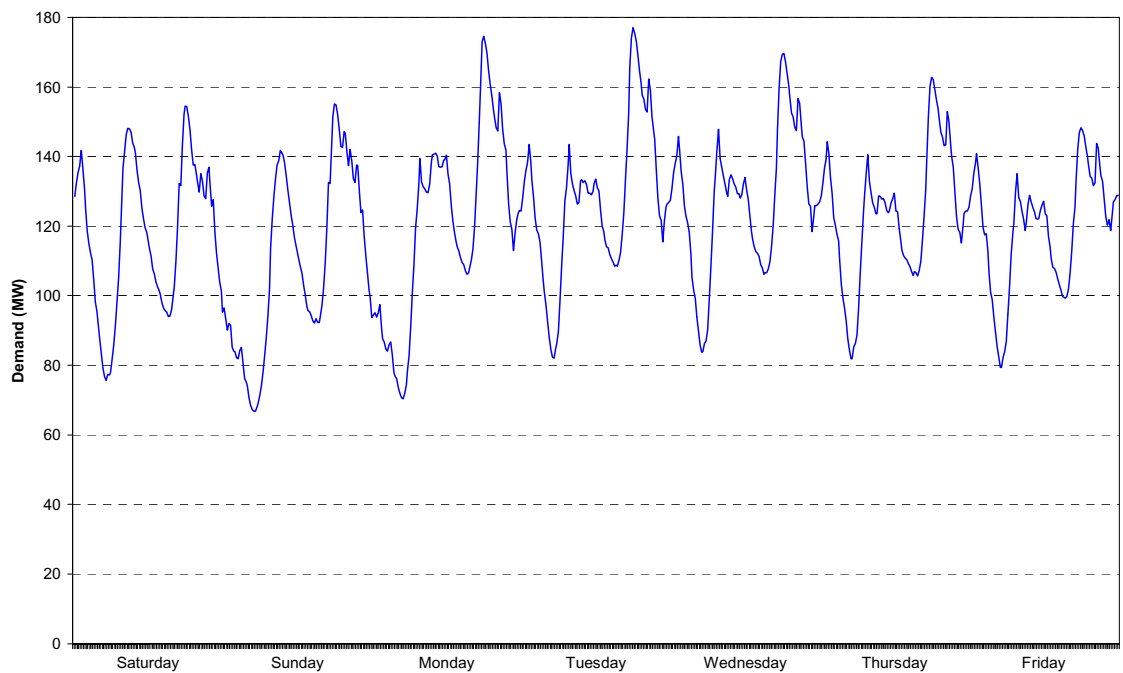


Figure 6 Demand Profile in the Week of Maximum Demand in 2000



5. Forecast Maximum Demands

The forecast peak demands for the Coffs Harbour to Port Macquarie area are shown in Table 1 below.

Table 1 Winter Peak Demand Forecasts (MW)

Supply Point	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Coffs Harbour	63.0	64.9	66.8	68.8	70.9	73.0	75.2	77.5	79.8	82.2
Dorrigo	4.1	4.2	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9
Nambucca	28.0	28.8	29.7	30.6	31.5	32.5	33.4	34.4	35.5	36.5
Kempsey 66 kV	4.0	4.1	4.2	4.2	4.3	4.4	4.5	4.6	4.7	4.8
Kempsey 33 kV	31.7	32.4	33.1	33.8	34.6	35.3	36.1	36.9	37.7	38.5
Port Macquarie	66.6	69.2	72.0	74.9	77.9	81.0	84.2	87.6	91.1	94.7
Total	197	204	210	217	224	231	238	246	254	262
Diversified Total	189	196	202	208	215	222	228	236	244	252

6. Opportunities for Demand Management or Local Generation

The opportunities for demand management or local generation in the Coffs Harbour to Kempsey area and the Port Macquarie area relate to outages of the two critical 132 kV lines described above.

To be effective in delaying the need for other works, such as reinforcement of the transmission network, demand management or local generation schemes should:

1. Reduce the peak demand for electricity. This would typically entail reducing demand during the period from around 5:30 pm to around 7:30 pm on winter days. However, if large demand reductions are being considered, they would be required for longer periods over winter evenings (and possibly also at other times, such as over morning peaks in winter or over summer peaks).
2. In aggregate, be comparable with or greater than the growth in maximum demand over one year. That is, at least 4 MW in the Coffs Harbour to Kempsey area and at least 3 MW in the Port Macquarie area.
3. Demand reductions in the Coffs Harbour to Kempsey area would be beneficial if the Armidale to Coffs Harbour line is out of service, but not if the Kempsey to Port Macquarie line is out of service. Demand reductions in the Port Macquarie area would be beneficial if either of these lines was out of service, although they would be only about half as effective as demand reductions in the Coffs Harbour to Kempsey area if the Armidale to Coffs Harbour line is out of service.
4. To continue to provide the level of reliability of supply which the area has received in the past, demand management and local generation schemes would need to offer a reasonably high level of reliability. The aim is to achieve, in aggregate, reliability levels similar to a transmission network (that is, typically better than 99% reliability).

In addition to proposals for the full level of demand management or local generation , TransGrid and Country Energy encourage proposals for schemes giving smaller demand reductions or having a lower level of reliability to be submitted as they may meet the overall requirements when combined with other schemes.

7. Making a Submission

Proposals can be submitted to either TransGrid or Country Energy by post, fax or email. It would be appreciated if the proposals included:

- Contact details for the person(s) submitting the proposal;
- An outline of the proposed scheme, including:
 - where it would be located or the area in which demand would be reduced;
 - the nature of the scheme (for example, improved energy efficiency of domestic lighting, use of existing standby generators, interruption of particular industrial processes);
 - the expected magnitude of demand reduction at times of high demand;
 - the likely magnitude of any financial support or incentive from TransGrid necessary to enable the scheme to be viable; and
 - the reliability expected or risk of unavailability.

TransGrid and Country Energy appreciate the effort required to develop proposals and do not want that to be an impediment to submitting a proposal. TransGrid and Country Energy anticipate that some proposals will not be highly developed and that it will be necessary to work with proponents to refine those proposals to the stage where their likely effectiveness (both technical and cost effectiveness) can be assessed.

8. TransGrid and Country Energy Contacts

For further information, please contact:

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