

The National Electricity Rules 2010 requires that voltage stability must be maintained for the Inner Metropolitan network following a two contingency outage. The reactive support must not be less than 1% of the maximum fault level.

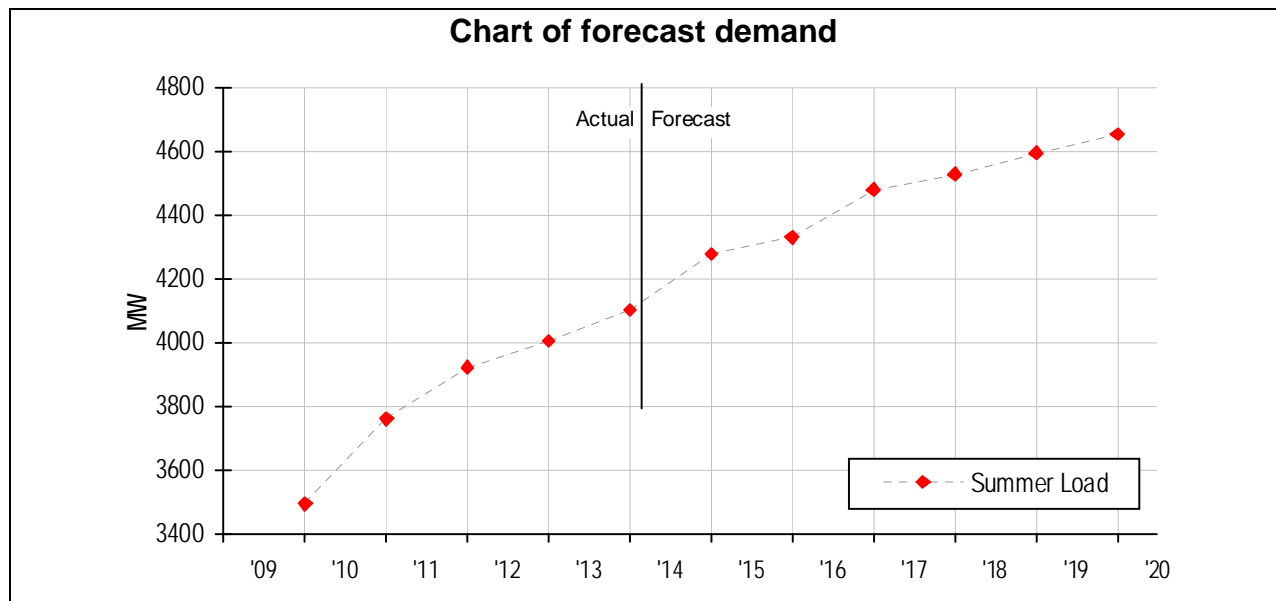
As part of a previous project to install a new BSP in the Inner Metro Network, a series of load flow studies were undertaken to determine the timing of the new BSP. These studies assumed that a number of additional 132kV capacitors were installed to provide reactive support to the Network in the inner metro region.

A review of these studies was undertaken by an independent consultancy, SKM, to verify the timing of the new BSP and also confirmed the need for reactive support in the Inner Metropolitan area.

Supply Capacity and Demand Forecast

The load demand from the Inner Metropolitan area is predominately commercial, with the peak demand occurring in summer between 2pm and 8pm.

The demand is forecast to reach 3992MW in summer 2011/12.



The National Electricity Rules requires that the network is able to maintain voltage stability after a credible outage. For the Inner Metropolitan area the planning licence conditions require that the network has to be able to maintain voltage stability with 2 credible outages.

The 2010 reactive stability report from SKM investigated the networks compliance with the National Electricity Rules voltage stability schedule and determined that 132kV capacitors are required at Peakhurst and Bunnerong STS to meet compliance.

The worst case scenario is a simultaneous outage of 330kV feeder 42 between Sydney South and Haymarket BSP, and 132kV feeder 91L between Peakhurst Bunnerong STS.

To defer the capacitors at Peakhurst, a demand reduction would need to occur in the zone substations supplied by Peakhurst STS, the zones that feed the St George area. The zones fed by Peakhurst STS are; Kogarah, Carlton, Arncliffe, Hurstville North, Rockdale, Blakehurst, Riverwood, Sans Souci and Mortdale.

To defer the capacitors at Bunnerong, a demand reduction would need to occur in the zone substations supplied by Beaconsfield West or Haymarket STS. The zones supplied by Beaconsfield West or Haymarket STS are; City South, City Central, City North, Kingsford, Maroubra, Green Square, Zetland, Double Bay and Clovelly.

Supply Strategy Option

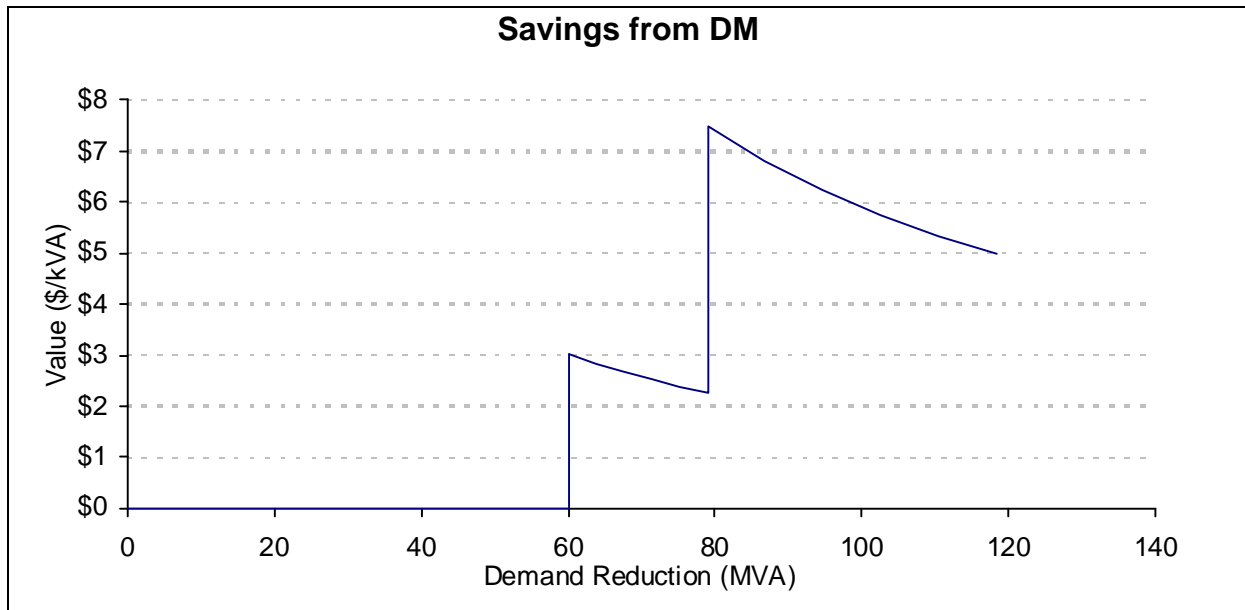
The preferred supply side option is to install a 132kV, 80MVA capacitor bank at Bunnerong STS in October 2010, and a 132kV, 80MVA capacitor bank at Peakhurst STS in December 2011.

The planning estimate for this project is \$5.7M. The expected project completion date is October 2010. A decision on this investment must be made by September 2010.

Required Demand Management Characteristics

60MVA of demand reduction is required by summer 2010/11 to enable a 1 year deferral of the 80MVA capacitor bank at Bunnerong BSP, which is very large. The potential savings for a 1 year deferral is \$180,000 which equates to \$3/kVA, which is very low.

To enable a 2 year deferral of the capacitors at Bunnerong and a 1 year deferral of the capacitors at Peakhurst, 79 MVA of demand reduction is required by summer 2011/2012, which is very large. A 2 year deferral has the potential for \$590,000 in savings which equates to \$7/kVA which is very small.



Based on the extremely large size of the demand requirement and the extremely small relative potential savings, it is not considered reasonable to expect demand management to cost effectively defer this investment.

Recommendation

Based on this analysis it is not considered reasonable to expect that it would be cost-effective to postpone the proposed supply-side solution by implementing demand management strategies.