RESPONSE TO THE VENCORP CONSULTATION ON THE VALUE OF UNSERVED ENERGY

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1. INTRODUCTION

SPI PowerNet welcomes the opportunity to comment on VENCorp's proposed changes to the electricity transmission planning criteria used in its transmission investment decision analysis; centring on adopting a value of customer reliability. This is of importance to SPI PowerNet because the level of investment in the Victorian Transmission System impacts directly on SPI PowerNet's risk profile.

The level of investment in the transmission network also impacts on National Electricity Market (NEM) participants, including the reliability and cost of electricity delivered to end consumer. It could also influence operational and investment decisions made by Generators or investment decisions made by proponents of non-network solutions for identified network constraints. It thus warrants careful consideration of the criteria and methodologies that are used to evaluate new augmentations to the transmission network.

SPI PowerNet in principle supports the application of probabilistic planning criteria. However it is critical that the analysis that is carried out properly reflects all the benefits associated with providing additional transmission capacity. Any failure to achieve this may result in a systematic under investment in the transmission system resulting in uneconomic levels of transmission investment. This should be a considerable concern to market participants who may be unknowingly exposed to additional risks. From SPI PowerNet's perspective there is also a possibility that these risks may be attributed to SPI PowerNet, even though they are logically a risk associated with planning.

SPI PowerNet has had concerns regarding this for some time. We consider this study appropriately deals with one of these aspects, being the value of customer reliability. However we urge VENCorp to carefully consider other aspects including the methods used for deriving the level of energy at risk from scenarios based on a single demand level, the costs of contingencies beyond the design rating, a reflection of the possible dependence of multiple contingency events and costs associated with necessary outages for maintenance and construction.

2. BACKGROUND INFORMATION

VENCorp states that it uses a probabilistic approach to network planning, and does so in accordance with the economic test path of the ACCC's regulatory test. Under this test transmission investments only proceed if the net benefits provided by the investment exceeds the cost of the investment. With this approach the objective is to balance the incremental value of service reliability improvement and the incremental cost of providing that improvement, thereby establishing the optimum timing of the investment.

This method relies on a number of broad assumptions on issues like plant failure rates, load demand forecast and the value of customer reliability. The importance that is placed on the result should thus recognise that at best it only provides an approximation of the benefits and cost of providing additional transmission capacity and judgement must be exercised in making a planning decision. This has been described in more detail in the Office of the Regulator-General's paper on "Transmission Network Planning Criteria" in response to VENCorp's consultation process on electricity transmission network planning criteria.

3. IMPORTANCE TO SPI POWERNET

The value of energy not supplied is a key determinant of transmission investment decision making and assessing the need for investments based on end use customer needs. Accordingly this review has more relevance to customers and their views on this issue are most important.

However the issue of adequacy of investment in transmission impacts on SPI PowerNet significantly from a number of perspectives, including:

- Risk to SPI PowerNet arising from practical difficulties in separating planning and ownership risk,

- Difficulties in scheduling transmission outages.

The roles and responsibilities for transmission services in Victoria have been defined in various agreements. SPI PowerNet is however of the opinion that it is difficult in a practical sense to completely and clearly separate the risks in contract, and that as a consequence SPI PowerNet has some exposure to planning risks. This mainly relates from the fact that SPI PowerNet has very limited or no control on the level of investment in the transmission system, but may still be seen as the cause when large amounts of load is shed due to a transmission constraint merely because of its ownership of the transmission network. This specifically applies to cases where it is hard to define whether the incident happened as result of SPI PowerNet's assets not being properly maintained or as a result of under investment in the transmission network or at least where the consequences may have been limited by additional assets. It is anticipated that the public will see SPI PowerNet's in all cases as the cause for these incidents merely because of its ownership of the transmission network.

These comments also apply to planning of connection assets and the Distribution Businesses (DBs) have indicated that they are awaiting the outcome of the VENCorp

study on the value of customer reliability and intend to use the same value to determine the indicative timing for network solutions as part of their transmission connection asset plan. They rightfully argue that the supply reliability should be consistent for all parts of the Victorian Electricity Transmission System and that the same planning and investment criteria should be applied to the connection and shared network.

In our role as the asset owner we require maintenance outage windows to carry out maintenance on plant, thereby ensuring that network availability performance standards are maintained at the current high levels. It is expected that there will be an increase in both the requirement for maintenance and construction outages. The first being as a result of the aging transmission network and the latter as a result of SPI PowerNet's asset replacement plan to replace assets that have reached their technical and regulatory asset life expectancy. An under investment in the transmission system results in an increased loading of network elements. This complicates and reduces opportunities to undertake maintenance on plant and to obtain outages for augmentations to the transmission system.

4. VALUE OF CUSTOMER RELIABILITY

SPI PowerNet supports the view that the benefits provided by transmission investments should not be limited to the wholesale electricity market price cap (the current value of VOLL is $10 000/MWh), but should reflect end consumers' value of supply reliability. SPI PowerNet also agrees with the proposal to use a sector-weighted value of customer reliability for transmission investment decision analysis where the transmission investment decision involves a broad group of customer classes.

It appears that the value of customer reliability was determined for relatively localised outages and that further work needs to be undertaken to assess the value of customer reliability for network incidents that effect larger areas.

The impact of interruption duration on the value of customer reliability is another consideration that may influence the result of the cost benefit analysis. A single value for the value of customer reliability will however provide guidance with respect to the opportune time for the transmission investment to proceed.

5. OTHER ISSUES TO BE CONSIDERED IN THE INVESTMENT DECISION

SPI PowerNet recognises that the probabilistic planning approach must be rigorous in its assessment of all benefits of transmission augmentation if a central planning regime is used to assess transmission investment needs. The review of the value of customer load is one key factor, but SPI PowerNet considers there are a number of other issues that require further consideration. These issues are described in this section.

5.1 Plant Failure Rates and Outage Durations

VENCorp indicated that they are presently reviewing the method by which plant failure probabilities are calculated and that this study will include an assessment to establish whether a correlation exist between plant failure incidents, ambient temperature and network loading levels. SPI PowerNet suggests that this study be expanded to include the following:

- An assessment of the impact of geographical location on plant failure rate and outage times. This study should consider the effect of air pollution levels, lightning incidence levels, all climatic conditions in coastal zones that may impact on transmission availability, and any other issues that may effect plant failure rates and outage times.

- An assessment of the impact of age on plant failure rates and outage times. The majority of the transmission plant installed on the Victorian Transmission System is within the last third of its technical and regulatory life and the likelihood of increased failure rates and prolonged outage duration times should be considered.

- An assessment of the possible impact of interacting failures of primary plant as well as interacting failures that involve secondary plant. The impact of multiple contingencies should be analysed because it appears that probabilistic planning methods are presently only applied to analyse isolated parts of the transmission network and events that could result in network outages are considered to be mutually exclusive.

5.2 Low Probability Incidents with Prolonged Outages

A single value for customer reliability does not necessarily reflect the real value of supply reliability for situations where large blocks of load are at risk and the outage times could be prolonged because of the network configuration, the criticality of plant supplying the load or the unfeasibility/impracticality of contingency plans to cover the risk posed by such an outage. Loads that are supplied from double circuit radial lines, where large blocks of load are at risk for the failure of a strain tower, could for example result in a prolonged outage.

It is recognised that the probability of these events occurring is very low for most cases; the possible consequence of this type of event, however, warrants a consideration of the feasibility and restoration times that will be required to restore the supply. A cost benefit analysis is a simplified attempt to provide a value of the cost of the non-provision of transmission investment, but is likely to be off the mark of gauging the real cost should

such an event occur, especially when the impact of the event is not isolated and the outage time may be prolonged.

SPI PowerNet believes this matter deserves more consideration and that it can not simply be ignored by stating that it will be impractical and ineffective to cap exposures to these type of incidents.

5.3 Maintenance Outages

Transmission plant needs to be maintained at regular intervals. This requires outages of plant, which then result in a less secure supply. This needs to be considered in the investment decision and will contribute to the costs associated with the non-provision of transmission capacity or the benefits of providing additional capacity.

5.4 Estimation of Energy at Risk

We note that there has been some debate with the NECA Reliability Panel regarding the analytical approach used to estimate the expected level of energy at risk from discrete load scenarios. This aspect needs to be resolved since it appears from the analysis carried out by the Reliability Panel that there is potential for the level of energy at risk to be underestimated. We understand that VENCorp is currently reviewing this issue, and we are interested in learning the outcome of this review.

6. CONCLUSION

SPI PowerNet supports the findings of the study on the Value of Customer reliability (VCR) and we commend VENCorp on this initiative. SPI PowerNet however would also like to draw VENCorp's attention to the additional aspects raised in this paper that may impact on the accuracy and validity of the investment decision analysis and suggest a review of these matters:

- The plant failure rates and outage times used in the cost benefit assessment
- The treatment of low probability high impact events
- The treatment of maintenance time windows in the cost benefit analysis
- The possible impact on the timing of the transmission investment if necessary construction outages are included in the investment decision analysis