26 February 2011

The Chairman
Tasmanian Electricity Industry Expert Panel
GPO Box
Hobart TAS 7001

Dear Sir,

Initial Submission to Expert Panel

Attached is my initial submission to the Expert Panel in which I address Terms of Reference (ToR) 1, 2 and 5. The issues are substantially identical to the issues addressed to the Office of The Tasmanian Energy Regulator in 2010.

In brief, my submission is that the efficiency and effectiveness of the Tasmanian electricity industry is constrained by the current business boundary between Transend and Aurora, and that Tasmanian electricity customers are burdened both in a financial sense and in poor service delivery relative to the electricity industry elsewhere in Australia (ToR 1).

The operational boundary between Transend and Aurora imposes an unnecessary burden on both businesses. Transend owns and operates about 66% of the distribution feeder high voltage (HV) circuitbreakers, which imposes a distraction on Transend's transmission operators, and imposes a third party obligation on Aurora's distribution operators. This is a dysfunctional business boundary that adds complexity to the Tasmanian electricity industry.

Each substation that Transend builds with distribution feeders controlled by the transmission operator is poor infrastructure development (ToR 2). Costs to Tasmanian customers increase and dysfunctional service delivery is perpetuated.

Modern work practices in distribution networks include a large proportion of high voltage live line work and transfer of loads between HV feeders without supply interruption. Each task requires temporary safety measures that include adjustments to control and protection relays associated with the HV feeder circuit breaker. All tasks should be done by the one operational team.

Faults on distribution feeders occur more often than to the transmission network due to many factors, flora and fauna, weather, proximity to roads and customer infrastructure. All the more reason for the distribution operator to receive fault data and circuit breaker information automatically, rather than depend on the good will of a transmission operator. Aurora's distribution operators do not receive fault data and distribution circuit breaker status directly, but have to ask Transend's transmission operator for that information.

In no other Australian jurisdiction is the distribution operator required to request the transmission operator to operate a distribution feeder circuit breaker routinely, or adjust the associated protection settings, or request fault data.

Looking to the future, the current operational boundary will inhibit the development of "smart network" technology in the distribution network, again because 66% of the distribution HV circuit breakers are owned and operated by the transmission operator, Transend.

In my view, realignment of the operating boundary between the transmission and distribution networks is an essential action in minimising the impact on cost of living for Tasmanian electricity customers, and facilitating introduction of new technology.

Realignment of the operating boundary between the transmission and distribution networks will reduce operating costs and improve service delivery to Tasmanian customers, and make interaction between the three state-owned businesses more effective (ToR 5).

Improvements for customers can be achieved either by realigning the ownership boundary between the Transmission and Distribution networks or by merging the ownership of the Transmission and Distribution networks and realigning operational boundaries.

I would be pleased to address the Panel in person.

Yours faithfully

David Asten
MIEAust, MIES(ANZ)
Chartered Professional Engineer.

Response to

2010 Reliability Review Draft Report

Issued by:

Office of the Tasmanian Economic Regulator

Response submitted by

David Asten

MIEAust, Chartered Professional Engineer

DA Electricity

30 November 2010

Executive Summary

It is recommended that the Economic Regulator acknowledges the fact that Tasmanian electricity customers experience disadvantages in having responsibilities for managing distribution circuit breakers divided between Transend and Aurora. The Draft Report overlooks this basic point in reviewing the performance of Transend and Aurora.

Transmission operators have an increasingly complex transmission network to manage – a wide network of Hydro power stations, increasing number of windfarms, Basslink, a number of large customers directly connected to transmission assets and about 200 distribution feeders.

Distribution feeder circuit breakers have become a distraction to transmission operators and should be transferred to distribution operators, in line with industry practice in every other state of Australia.

Modern work practices in electricity distribution networks require levels of live-line working that were not envisaged when the Tasmanian transmission and distribution networks were transferred into separate companies in 1998.

Live-line techniques are now used every day in the distribution network to perform maintenance, connect new high voltage equipment, clear vegetation away from conductors, and transfer loads from one feeder to another. In each live-line task, there are safety measures to be taken that usually involve the relays and controls associated with the distribution circuit breaker.

It is time to align business boundaries with functional boundaries so that Tasmanian customers can benefit properly from live-line technology and benefit from developing “Smart Network” technologies.

As distribution circuit breakers are the principal control devices for each distribution feeder, and their associated relays hold data that is critical for “best practice” management of distribution networks, Tasmanian customers can reasonably expect the oversighting Regulator to press for alignment of boundaries that will deliver better outcomes for Tasmanians.

A copy of a Transend diagram is used to illustrate some points.

The author submitted a presentation to the OTTER Reliability Workshop on 19 October 2010 in which the above views were expressed in greater detail.

Transmission Constraints and Challenges

In the 2010 Reliability Review, Transend lists many sections of the transmission network that suffer from constraints under certain operating conditions. Availability factors are listed for transmission lines, EHV busbar sections and transformers as these are significant in any transmission environment. Understandably, Transend puts a lot of work into assessing the risk of loss of one of these items and a lot of effort into the means to alleviate that risk.

As more windfarms are commissioned and Tasmania's hydro generation is used more for "infill generation", inertia support for frequency control and mainland peak-load support via Basslink, good and close management of the Tasmanian transmission network will become more important. Any management of distribution assets by Transmission operators will become more of a distraction

However, availability of the distribution circuit breaker and the associated operational data are high priority to the Distribution operator, and if that control were transferred to Aurora, customers across Tasmania would benefit from the Distribution operator's ability to respond faster to feeder faults .

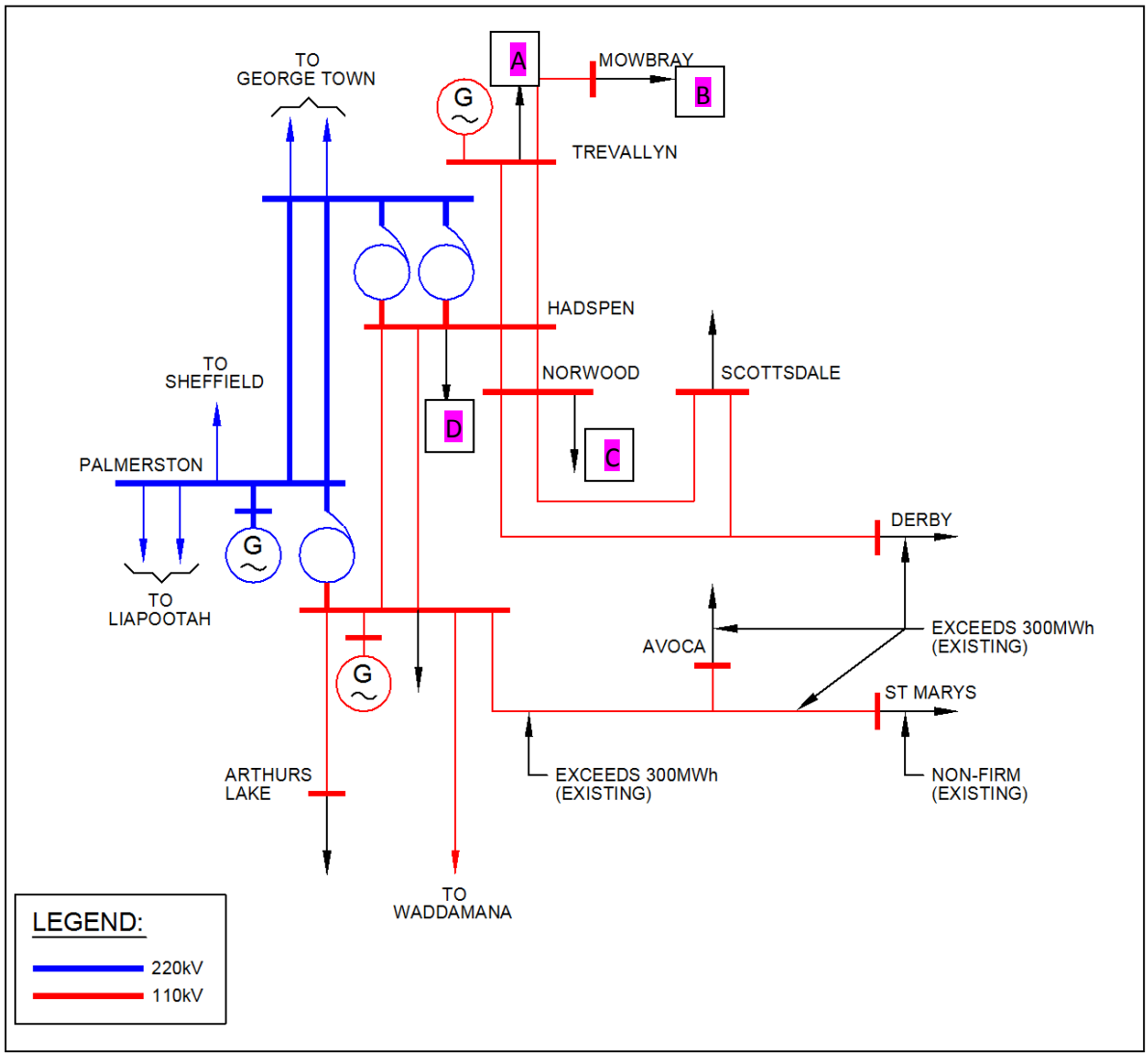
Faults earlier this year in Launceston (Dell Lane), and in North Hobart affected large sections of CBD businesses, emergency services and hospitals in each city for several hours. It would be instructive to have an outside assessment of the likely duration of supply interruptions in these two incidents had the Distribution operator had control of the distribution feeder circuit breakers.

The diagram below is copied from a Transend report and modified to illustrate some of the points made in this response. Particularly, to illustrate how the existing Transend substations have many transmission and generator inputs, requiring attention from Transmission operators.

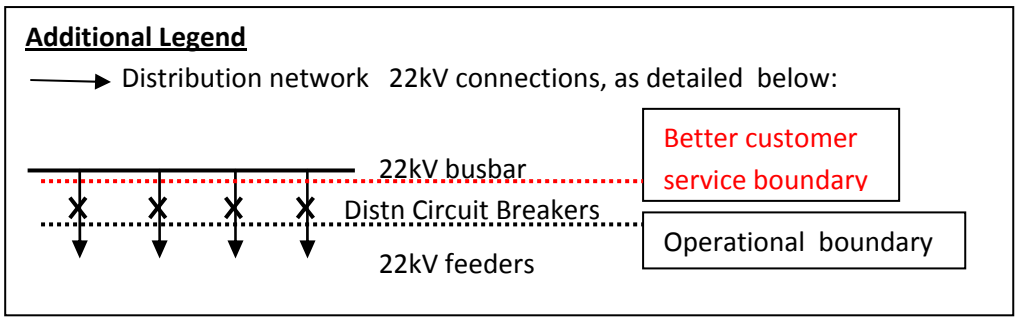
Conversely, for electricity customers to get the service they might reasonably expect today, Distribution operators need control of the distribution connections, and the associated data.

In the greater Launceston area, Distribution operator control of 22kV circuit breakers at Trevallyn (A), Mowbray (B), Norwood(C) and Hadspen(D) substations would give immediate benefits to the customers and facilitate introduction of any future "Smart Network" technology

Northern Transmission Network & connections to Distribution Network



Source: Transend 2010 Annual Planning Report



The current inappropriate operational boundary requires Distribution operator to request help from Transmission operator to deliver service to retail customers, both for routine daily work and maintenance, and to restore supply following a fault in the distribution network.

Transmission operator often has higher priority tasks in the transmission network, slowing distribution daily preparation, and extending customer outage durations. Particularly noticeable in Launceston and Hobart CBD and suburban areas, where distribution operators are on duty 24/7.

Launceston Distribution Network

In the above diagram Trevallyn(A), Mowbray (B), Norwood(C) , and Hadspen(D) substations supply the whole Launceston area. In this area, most 22kV distribution feeders can be inter-connected with other feeders to allow load transfers and maintain continuity of supply in a way that Transmission operators have little experience.

Many routine daily distribution projects require temporary changes of protection relay settings at the distribution feeder circuit breaker:

- Load transfers
- Live-line work
- Vegetation clearance

As more work on distribution high voltage feeders is done using live-line techniques, more preparatory safety tasks are required at the feeder circuit breaker, and any delay at the start and end of the daily work adds to costs. It is not efficient to out-source a few tasks to another business where those tasks are not a high priority to that business. In no other Australian state does the Distribution operator have to request action from the Transmission operator for operation of the distribution circuit breaker or to alter settings on the associated relays.

In the Launceston area, distribution operators are on duty or on-call 24 hours per day. They have much more expertise in operating the distribution network, and understanding of distribution network issues than Transmission operators.

Hobart Distribution Network

About 66% of the feeders in the greater Hobart area are controlled by Distribution operators. However, where distribution feeders emanate from Transmission substation sites, the Transmission business has refused to allow the Distribution operator operational access to those circuit breakers. As a consequence, operating the Hobart distribution network is more complicated and cumbersome process than it need be, and the Tasmanian electricity customers suffer from the inappropriate operational boundary maintained by the owners of the two networks.

On the Western shore ownership of distribution feeder circuit breakers is as follows:

Site	**Owner**	**Distribution CBs**
Kingston	Transend	11kV
Sandy Bay Zone	Aurora	11kV
West Hobart	Aurora	11kV
East Hobart	Aurora	11kV
North Hobart	Transend	11kV
New Town	Aurora	11kV
Derwent Park	Aurora	11kV
Glenorchy	Transend	11kV
Claremont	Aurora	11kV
Bridgewater	Transend	11kV

On the Eastern shore, ownership of distribution feeder circuit breakers is as follows:

Site	Owner	Distribution CBs
Rokeby	Transend	11kV
Bellerive Zone	Aurora	11kV
Geilston Bay	Aurora	11kV
Cambridge	Aurora	11kV
Bridgewater	Transend	11kV

Routine daily operational tasks in greater Hobart are more complicated and tedious than they need be, resulting in additional costs to the Distribution operator that in turn are passed on to Tasmanian customers. Customers suffer from the inappropriate business boundaries including longer durations in supply restoration following faults.

Reliability & Customer Disadvantage

Aurora's Reliability report on indicates a number of community groups suffering from numbers of outages (SAIFI) above the Regulatory levels prescribed. However supply outage durations (SAIDI) are substantially above the Regulatory levels prescribed. This trend indicates a problem in operational coordination, and it is very believable that divided responsibility for control of distribution circuit breakers contributes to this poor level of customer service.

At best, divided distribution responsibility prolongs customer supply interruptions and increases costs in planning and executing work in the distribution network. Neither scenario is a good one for Tasmanian electricity customers, and both scenarios put Tasmanian businesses at a disadvantage compared with mainland states.

Transend's Reliability report shows that they have many challenges in managing transmission lines, connections with Basslink, connections with Hydro Tasmania's power stations, connections with windfarms, maintaining network stability and a number of large direct-connected customers such as Comalco at George Town, Norske Skog at New Norfolk, and and Nystar in Hobart.

Operating distribution feeder circuit breakers can only be a distraction from Transend's core tasks, and indeed responsibility for distribution circuit-breakers is not a responsibility that any other Transmission operator has in mainland states.

One significant weakness in the current Regulatory regime is that parties are bound to work within the current business boundaries between transmission and distribution networks. The likely outcome for Tasmanian customers is that all parties fiddle with assets and systems within a flawed model rather than fix the underlying problem. The fundamental problem relates to business boundaries that were out-of-step with industry functional boundaries 12 years ago, are not appropriate today and will inhibit application of tomorrow's Smart Network technologies.

Tasmanian electricity customers deserve action to adjust the current business boundary between transmission and distribution networks, action to deliver better service, and action that will facilitate introduction of Smart Network technologies in the near future.

Recommendations

1. I recommend that the Economic Regulator acknowledge the disadvantages to Tasmanian customers of divided responsibility for managing distribution circuit breakers – the devices that are the principal control devices for each distribution feeder.

2. As a starting point, I recommend that in the greater Launceston area, control of the 22kV distribution circuit breakers at Trevallyn, Mowbray, Norwood and Hadspen substations and access to the associated relays be transferred to the Distribution operator. When the St Leonards substation is built, it should be designed to permit immediate control of the distribution circuit breakers by the Distribution operator and appropriate physical access.

3. As a starting point, I recommend that in the greater Hobart area, control of the 11kV distribution circuit breakers at Kingston, North Hobart, Glenorchy and Bridgewater substations and access to the associated relays be transferred to the Distribution operator.

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