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General Comment

Section B.1.V(2)b

The detection and protection for faults in the transmission system is commonly maintained with a single channel due to protection of the equipment and personal. This is in contrast of what commission is proposing single failure criteria requirements for open phase faults.
The event at Byron would have been detected if the relays were designed to operate with "1 out of 1" logic instead of "2 out of 2" logic.

BTP section B.1.III

The transmission system of the plants is a non-safety related and a Class 1E detection and actuation circuits as proposed by the commission is far reaching in the non-safety area. Not only this will be overly burdensome to implement, it dilutes the distinction between safety and non-safety related system.

General:

Everyone knows the danger of dropped transmission/distribution lines, since the transmission industry does not have a viable method to detect such faults. Three phase power in the industry is commonly applied intentionally with open-delta configuration using 2 single phase transformers to save additional cost of transformer. That means some configuration can successfully operate with open phase on high side of the transformer. In that case, an open phase could be considered a planned configuration instead of a fault or anomaly. It is important to detect the open phase but since it is rare event and no practical method exists at this time, the regulator and industry should move cautiously to enforce and implement any solutions.

Due to differences in design, physical and operating configurations, vulnerability of the plants to open phase is different and different approach should be used. All factors such as switchyard and plant topology and single unit versus multiple units' plant should be considered. For example, the exposure of open phase is much higher if the plant powers the redundant trains from a single grid versus the plant that powers redundant trains from two different grids. Similarly response of "2 out of 2" logic versus" 2 out of 3 logic" will be different to open phase.

There are fail safe solution such as EPRI neutral injection which provide active supervisory instrumentation to minimize spurious actuation which are capable of providing adequate protection from mal-operation, without use of redundant sensors or coincidence logics.