WECC Regional Difference
Comparison of FAC-010-1 (*Planning Horizon*) with Current NERC/WECC Planning Standards

Proposed NERC FAC-010 (*Planning Horizon*)		**Current WECC/NREC Planning Standards**	
E1 As governed by the requirements of R2.4 and R2.5, starting with all facilities in service, shall require the evaluation of the following multiple Facility Contingencies when establishing SOLs:		**IA** **IA -- Table I** **IIIF**	
Contingencies	**Performance Requirements**	**Contingencies**	**Performance Requirements**
E1.1.1 Simultaneous permanent phase to ground Faults on different phases of each of two adjacent transmission circuits on a multiple circuit tower, with Normal Clearing. If multiple circuit towers are used only for station entrance and exit purposes, and if they do not exceed five towers at each station, then this condition is an acceptable risk and therefore can be excluded.	**E1.2.1** All Facilities are operating within their applicable Post-Contingency thermal, frequency and voltage limits. **E1.2.2** Cascading Outages do not occur. **E1.2.3** Uncontrolled separation of the system does not occur. **E1.2.4** The system demonstrates transient, dynamic and voltage stability. **E1.2.5** Depending on system design and expected system impacts, the controlled interruption of electric supply to customers (Load shedding), the planned removal from service of certain generators, and/or the curtailment of contracted firm (non-recallable reserved) electric power transfers may be necessary to maintain the overall security of the interconnected transmission systems.	**Fault (non 3Ø), with Normal Clearing**[f]**– - Category C.5** Any two circuits of a multiple Circuit towerline[g]	**a.** Line and equipment loadings shall be within applicable thermal rating limits. **b**. Voltage levels shall be maintained within applicable limits. **c**. Planned (controlled) interruption of customer demand or generation (as noted in Table I, footnote d) may occur, and contracted firm (nonrecallable reserved) transfers may be curtailed. **d**. Stability of the network shall be maintained. **e.** Cascading outages shall not occur.
E1.1.2 A permanent phase to ground Fault on any generator, transmission circuit, transformer, or bus section with Delayed Fault Clearing except for bus sectionalizing breakers or bus-tie breakers addressed in E1.1.7		**SLG Fault, with Delayed Clearing**[f] **(stuck breaker):** **Category C6**. Generator **Category C7.** Transmission Circuit **Category C8.** Transformer **Category C9.** Bus Section	
E1.1.3 Simultaneous permanent loss of both poles of a direct current bipolar Facility without an alternating current Fault.		**Bipolar Block, with Normal Clearing**[f] **Category C4.** Bipolar (dc) Line	

E1.1.4 The failure of a circuit breaker associated with a Special Protection System to operate when required following: the loss of any element without a Fault; or a permanent phase to ground Fault, with Normal Clearing, on any transmission circuit, transformer or bus section.	**E1.2.6** Interruption of firm transfer, Load or system reconfiguration is permitted through manual or automatic control or protection actions. **E1.2.7** To prepare for the next Contingency, system adjustments are permitted, including changes to generation, Load and the transmission system topology when determining limits.	**SLG Fault, with Delayed Clearing[f] (protection system failure):** **Category C6**. Generator **Category C7.** Transmission Circuit **Category C8.** Transformer **Category C9.** Bus Section **IIIF.S1.M1** When planning new or substantially modified transmission control devices, transmission owners shall evaluate the impact of such devices on the reliability of the interconnected transmission systems. The assessment shall include sufficient modeling of the details of the dynamic devices and encompass a variety of contingency system conditions. The assessment results shall be provided to the Regions and NERC on request. (S1)	
E1.1.5 A non-three phase Fault with Normal Clearing on common mode Contingency of two adjacent circuits on separate towers unless the event frequency is determined to be less than one in thirty years.		**WECC-S2** The NERC Category C.5 initiating event of a non-three phase fault with normal clearing shall also apply to the common mode contingency of two adjacent circuits on separate towers unless the event frequency is determined to be less than one in thirty years.	
E1.1.6 A common mode outage of two generating units connected to the same switchyard, not otherwise addressed by FAC-010.	**E1.3** Cascading Outages do not occur.	**WECC-S3** The common mode simultaneous outage of two generator units connected to the same switchyard, not addressed by the initiating events in NERC Category C, shall not result in cascading.	Shall not result in cascading
E1.1.7 The loss of multiple bus sections as a result of failure or delayed clearing of a bus tie or bus sectionalizing breaker to clear a permanent Phase to Ground Fault.		**WECC-S4** The loss of multiple bus sections as a result of a failure or delayed clearing of a bus tie or bus sectionalizing breaker shall meet the performance specified for Category D of the WECC Disturbance-Performance Table.	Shall meet the performance specified for Category D of the WECC Disturbance-Performance Table.

Footnotes from NERCD/WECC Standard IA, Table I

f Normal clearing is when the protection system operates as designed and the fault is cleared in the time normally expected with proper functioning of the installed protection systems. Delayed clearing of a fault is due to failure of any protection system component such as a relay, circuit breaker, or current transformer (CT), and not because of an intentional design delay

g System assessments may exclude these events where multiple circuit towers are used over short distances (e.g., station entrance, river crossings) in accordance with Regional exemption criteria

WECC Regional Difference
Comparison of FAC-011-1 (*Operating Horizon*) with Current NERC/WECC Planning Standards

Proposed NERC FAC-011 (*Operating Horizon*)		**Current WECC/NREC Planning Standards**	
E1 As governed by the requirements of R3.3, starting with all facilities in service, shall require the evaluation of the following multiple Facility Contingencies when establishing SOLs:		**IA** **IA -- Table I** **IIIF**	
Contingencies	**Performance Requirements**	**Contingencies**	**Performance Requirements**
E1.1.1 Simultaneous permanent phase to ground Faults on different phases of each of two adjacent transmission circuits on a multiple circuit tower, with Normal Clearing. If multiple circuit towers are used only for station entrance and exit purposes, and if they do not exceed five towers at each station, then this condition is an acceptable risk and therefore can be excluded.	**E1.2.1** All Facilities are operating within their applicable Post-Contingency thermal, frequency and voltage limits. **E1.2.2** Cascading Outages do not occur. **E1.2.3** Uncontrolled separation of the system does not occur. **E1.2.4** The system demonstrates transient, dynamic and voltage stability. **E1.2.5** Depending on system design and expected system impacts, the controlled interruption of electric supply to customers (Load shedding), the planned removal from service of certain generators, and/or the curtailment of contracted firm (non-recallable reserved) electric power transfers may be necessary to maintain the overall security of the interconnected transmission systems.	**Fault (non 3Ø), with Normal Clearing**[f]**– - Category C.5** Any two circuits of a multiple Circuit towerline[g]	**a.** Line and equipment loadings shall be within applicable thermal rating limits. **b.** Voltage levels shall be maintained within applicable limits. **c.** Planned (controlled) interruption of customer demand or generation (as noted in Table I, footnote d) may occur, and contracted firm (nonrecallable reserved) transfers may be curtailed. **d.** Stability of the network shall be maintained. **e.** Cascading outages shall not occur.
E1.1.2 A permanent phase to ground Fault on any generator, transmission circuit, transformer, or bus section with Delayed Fault Clearing except for bus sectionalizing breakers or bus-tie breakers addressed in E1.1.7		**SLG Fault, with Delayed Clearing**[f] **(stuck breaker):** **Category C6**. Generator **Category C7.** Transmission Circuit **Category C8.** Transformer **Category C9.** Bus Section	
E1.1.3 Simultaneous permanent loss of both poles of a direct current bipolar Facility without an alternating current Fault.		**Bipolar Block, with Normal Clearing**[f] **Category C4.** Bipolar (dc) Line	

E1.1.4 The failure of a circuit breaker associated with a Special Protection System to operate when required following: the loss of any element without a Fault; or a permanent phase to ground Fault, with Normal Clearing, on any transmission circuit, transformer or bus section.	**E1.2.6** Interruption of firm transfer, Load or system reconfiguration is permitted through manual or automatic control or protection actions. **E1.2.7** To prepare for the next Contingency, system adjustments are permitted, including changes to generation, Load and the transmission system topology when determining limits.	**SLG Fault, with Delayed Clearing[f] (protection system failure):** **Category C6**. Generator **Category C7.** Transmission Circuit **Category C8.** Transformer **Category C9.** Bus Section **IIIF.S1.M1** When planning new or substantially modified transmission control devices, transmission owners shall evaluate the impact of such devices on the reliability of the interconnected transmission systems. The assessment shall include sufficient modeling of the details of the dynamic devices and encompass a variety of contingency system conditions. The assessment results shall be provided to the Regions and NERC on request. (S1)	
E1.1.5 A non-three phase Fault with Normal Clearing on common mode Contingency of two adjacent circuits on separate towers unless the event frequency is determined to be less than one in thirty years.		**WECC-S2** The NERC Category C.5 initiating event of a non-three phase fault with normal clearing shall also apply to the common mode contingency of two adjacent circuits on separate towers unless the event frequency is determined to be less than one in thirty years.	
E1.1.6 A common mode outage of two generating units connected to the same switchyard, not otherwise addressed by FAC-011.	**E1.3** Cascading Outages do not occur.	**WECC-S3** The common mode simultaneous outage of two generator units connected tothe same switchyard, not addressed by the initiating events in NERC Category C, shall not result in cascading.	Shall not result in cascading
E1.1.7 The loss of multiple bus sections as a result of failure or delayed clearing of a bus tie or bus sectionalizing breaker to clear a permanent Phase to Ground Fault.		**WECC-S4** The loss of multiple bus sections as a result of a failure or delayed clearing of a bus tie or bus sectionalizing breaker shall meet the performance specified for Category D of the WECC Disturbance-Performance Table.	Shall meet the performance specified for Category D of the WECC Disturbance-Performance Table.

Footnotes from NERCD/WECC Standard IA, Table I

f Normal clearing is when the protection system operates as designed and the fault is cleared in the time normally expected with proper functioning of the installed protection systems. Delayed clearing of a fault is due to failure of any protection system component such as a relay, circuit breaker, or current transformer (CT), and not because of an intentional design delay

g System assessments may exclude these events where multiple circuit towers are used over short distances (e.g., station entrance, river crossings) in accordance with Regional exemption criteria