



Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

These guidelines are for protective devices that have been identified as needed for the Enhanced Powerline Safety Setting (EPSS) Program. The specific guidance below is for a Fast-Tripping Scheme mode of a device.

Controller Type	Normal Mode	Rev	Protection / Device Settings
Cooper 4C	Recloser	Any	<p>Normal Profile: Designed for dual application of normal conditions and Fast-Tripping. Fast-tripping scheme will be in effect when the reclosing relay is cut out. Blend existing protection standard/guidance for normal feeder conditions with the following fast-tripping additions:</p> <p>51P Settings (Phase TOC):</p> <ul style="list-style-type: none"> Load permitting, set Phase MTT $\leq 60\%$ LLL / 70% LL faults within EPSS protection zone, removing fuses and TripSavers as delimiters for downstream overhead (OH) line sections (i.e., “ignore” fuses/TripSavers, looking at OH line sections beyond fuses/TripSavers). Where load conflicts with above End-of-Line (EOL) philosophy, set Phase MTT as close to $1.2 \times$ normal maximum load (based on peak phase amps) as practical, to allow the Line Recloser (LR) to “see” as many faults as possible in the extended protective zone. Set TCC1Ph = 102 curve. <p>51N Settings (Ground TOC):</p> <ul style="list-style-type: none"> Set Ground MTT $\leq 50\%$ LG / 50% LLG faults within EPSS protection zone, removing fuses and TripSavers as delimiters for downstream OH line sections (i.e., “ignore” fuses/TripSavers, looking at OH line sections beyond fuses/TripSavers). <ul style="list-style-type: none"> Maintain ≤ 180 A (3-wire) or ≤ 240 A (4-wire) rule. Set TCC1Gd = 101 curve. <p>50P Settings (Phase INST): ^{2, 3}</p> <ul style="list-style-type: none"> Set phase instantaneous per existing protection standard/guidance for normal feeder conditions. Consider clearing time when setting the instantaneous time delay of upstream and downstream devices.



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			<p>50N Settings (Ground INST): ^{2, 3}</p> <ul style="list-style-type: none"> Set ground instantaneous per existing protection standard/guidance for normal feeder conditions. Consider clearing time when setting the instantaneous time delay of upstream and downstream devices. <p>50GS / SGF / SEF:</p> <ul style="list-style-type: none"> 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2 \times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). 4C controls use a percentage equivalent for the SGF setting based on the Ground MTT. Set time delay of furthest LR to 5 seconds, and each consecutive source-side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> Depending on natural ground current, the 5 A pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well, depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault disabled. <p>79 Reclosing Relay:</p> <ul style="list-style-type: none"> PHASE: Only 1 reclose (2 shots/trips to lockout) maximum, with a 25 second reclose interval. GROUND: No reclosing (1 shot/trip to lockout).



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			<p>Alternate: Keep/reserve as alternate setting for switching use (e.g., abnormal switching). Work with DOE counterpart, when needed, to select appropriate alternate settings, with the following considerations:</p> <p>50GS / SGF / SEF (Optional / Case Dependent):</p> <ul style="list-style-type: none"> 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2 \times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). 4C controls use a percentage equivalent for the SGF setting based on the Ground MTT. Set time delay of furthest LR to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> Depending on natural ground current, the 5 A pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault disabled.
Cooper Form 6	Switch	26, 27, 28, OR 30	<p>Consider RECLOSER mode and follow RECLOSER mode guidance; however, if kept as normal SWITCH mode, then:</p> <p>Phase (50P / 51P):</p> <ul style="list-style-type: none"> Set phase MTT $\leq 95\%$ of source side LR phase MTT. Set phase Instantaneous = Phase MTT, no delay (0.00 seconds). Set phase overcurrent alarm to 83% of Phase MTT with 60 s delay. When possible and load permitting, ensure setting can see EPSS EOL¹ (60% LLL, 70% LL) to next downstream protective device(s), looking beyond fuses/TripSavers.

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			<p>Ground (50N / 51N):</p> <ul style="list-style-type: none"> Set ground MTT $\leq 95\%$ of source side LR ground MTT. Set ground Instantaneous = Ground MTT, no delay (0.00 seconds). 3-wire Systems: Set ground overcurrent alarm limit to 10% of ground MTT with 60 s delay. 4-wire Systems: Set ground overcurrent alarm limit to 50% of ground MTT with 60 s delay. Ensure setting can see EPSS EOL¹ (50% LG, 50% LLG) to next downstream protective device(s), looking beyond fuses/TripSavers. <p>Set the Trips to Lockout greater than 1.</p> <ul style="list-style-type: none"> There is an issue with the “Blink Save” logic that will cause the device to operate like an LR even in SW mode if Alt 2 is set to 1 Trips to Lockout.
Cooper Form 6	Sectionalizer	28 OR 30	<p>The “Blink Save” feature is not effective with reclosing cut out (1 shot/trip to lockout). Change device from SECTIONALIZER mode to RECLOSER or SWITCH mode and follow appropriate guidance.</p> <p>An F6 SECTIONALIZER cannot be set with 1 Trips to Lockout – This will cause the device to operate as a RECLOSER due to the “Blink Save” feature logic.</p> <p>SECT mode is NOT recommended in Fire Areas due to the limit on reclose attempts on other protective mode devices.</p>



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Controller Type	Normal Mode	Rev	Protection / Device Settings
Cooper Form 6	Recloser	26, 27, 28, OR 30	<p>Normal Profile: As an additional protective measure for fire threat areas, perform the following modifications to Normal Profile.</p> <p>50GS / SGF / SEF:</p> <ul style="list-style-type: none"> 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2 \times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). Set time delay of furthest LR to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> Depending on natural ground current, the 5 A or $1.2 \times$ pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault disabled. <p>Phase and Ground Reclosing (79):</p> <ul style="list-style-type: none"> Only 1 reclose (2 trips to lockout) maximum, with a 25 second reclose interval. <p>Phase and Ground Overcurrent Alarms:</p> <ul style="list-style-type: none"> Set phase overcurrent alarm to 83% of Phase MTT with 60 s delay. 3-wire Systems: Set ground overcurrent alarm limit to 10% of ground MTT with 60 s delay. 4-wire Systems: Set ground overcurrent alarm limit to 50% of ground MTT with 60 s delay. <p>ALT1 Profile: If Alt 1 was used for EPSS before revision 30 (or later) release (February 2022), work with DOE counterpart to restore operational needed values to this profile with the below considerations for fire area protective measures.</p> <p>If Alt 1 is presently used for operations, work with DOE to retain operational set points with the below modifications for fire area protective measures.</p>



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			<p>50GS / SGF / SEF:</p> <ul style="list-style-type: none"> 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2\times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). Set time delay of furthest LR to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> Depending on natural ground current, the 5 A or $1.2\times$ pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault disabled. <p>Phase and Ground Reclosing (79):</p> <ul style="list-style-type: none"> Only 1 reclose (2 trips to lockout) maximum, with a 25 second reclose interval. <p>Phase and Ground Overcurrent Alarms:</p> <ul style="list-style-type: none"> Set phase overcurrent alarm to 83% of Phase MTT with 60 s delay. 3-wire Systems: Set ground overcurrent alarm limit to 10% of ground MTT with 60 s delay. 4-wire Systems: Set ground overcurrent alarm limit to 50% of ground MTT with 60 s delay.



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			<p>ALT3 Profile: ⁵ Alternate 3 profile is only available for Revision 30+ setting files. Whenever possible, Form 6 controlled EPSS devices should be upgraded to revision 30. On EPSS devices, Alt 3 will exclusively be used in relation to fire area protection/EPSS use.</p> <p>51P Settings (Phase TOC):</p> <ul style="list-style-type: none"> Load permitting, set Phase MTT $\leq 60\%$ LLL / 70% LL faults within the EPSS protection zone, removing fuses and TripSavers as delimiters for downstream OH line sections (i.e., “ignore” fuses/TripSavers, looking at OH line sections beyond fuses/TripSavers). Where load conflicts with above guidelines, set Phase MTT as close to $1.2 \times$ or $+50$ A normal maximum load (based on peak phase amps) as practical, to allow LR to “see” as many faults as possible in the extended protective zone. Set phase overcurrent alarm limits to 83% of phase MTT value with 60 s delay. <p>51N Settings (Ground TOC):</p> <ul style="list-style-type: none"> Set Ground MTT $\leq 50\%$ LG / 50% LLG faults within the EPSS protection zone, removing fuses and TripSavers as delimiters for downstream OH line sections (i.e., “ignore” fuses/TripSavers, looking at OH line sections beyond fuses/TripSavers). <ul style="list-style-type: none"> Maintain ≤ 180 A (3-wire) or ≤ 240 A (4-wire) rule. 3-wire Systems: Set ground overcurrent alarm limit to 10% of ground MTT with 60 s delay. 4-wire systems: Set ground overcurrent alarm limit to 50% of ground MTT with 60 s delay. <p>50P Settings (Phase INST): ^{1,3,4}</p> <ul style="list-style-type: none"> Set phase instantaneous equal to Phase MTT. Set phase instantaneous time delay of the furthest protective device, including FuseSavers, to 0.00 seconds, and each consecutive source-side protective device with an additional $+0.02$ to $+0.05$ second time delay, optimizing for margin. Protective device time delays not to exceed 0.10 second time delay (allows 0.02 s margin for up to 6 devices; consider SW MODE if >6 series protective devices).



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			<p>50N Settings (Ground INST): ^{1,3,4}</p> <ul style="list-style-type: none"> Set ground instantaneous equal to Ground MTT. Set ground instantaneous time delay of the furthest protective device, including FuseSavers, to 0.00 seconds, and each consecutive source side protective device with an additional +0.02 to +0.05 second time delay, optimizing for margin. Protective device time delays not to exceed 0.10 second time delay (allows 0.02 s margin for up to 6 devices; consider SW MODE if >6 series protective devices). <p>50GS / SGF / SEF:</p> <ul style="list-style-type: none"> 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2 \times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). Set time delay of furthest LR to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> Depending on natural ground current, the 5 A or $1.2 \times$ pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault disabled. <p>79 Settings (Reclosing):</p> <ul style="list-style-type: none"> No recloses – 1 shot/trip to lockout. <p>Cold-Load Pick-Up Settings:</p> <ul style="list-style-type: none"> Do NOT use. Operational practices are in place to address picking up cold load.



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Controller Type	Normal Mode	Rev	Protection / Device Settings
Beckwith M7679	Switch	7.1	<p>Consider RECLOSER mode and follow RECLOSER mode guidance; however, if kept as normal SWITCH mode, then:</p> <p>Phase (50P / 51P):</p> <ul style="list-style-type: none"> Set 51P pickup (TOC) $\leq 95\%$ of source side LR phase MTT/pickup. Set 50P pickup (INST) = 51P pickup, no delay (0.00 seconds). Set phase load encroachment alarm to 83% of phase MTT (50P Element 4) with 60 s delay. When possible and load permitting, ensure setting can see EPSS EOL¹ (60% LLL, 70% LL) to next downstream protective device(s), looking beyond fuses/TripSavers. <p>Ground (50N / 51N):</p> <ul style="list-style-type: none"> Set 51N pickup (TOC) $\leq 95\%$ of source side LR ground MTT/pickup. Set 50N pickup (INST) = 51N pickup, no delay (0.00 seconds). 3-wire Systems: Set ground load encroachment alarm limit to 10% of ground MTT (50N Element 4) with 60 s delay. 4-wire systems: Set ground load encroachment alarm limit to 50% of ground MTT (50N Element 4) with 60 s delay. Ensure setting can see EPSS EOL¹ (50% LG, 50% LLG) to next downstream protective device(s), looking beyond fuses/TripSavers. <p>Sensitive Ground (50GS):</p> <ul style="list-style-type: none"> Even though disabled, set 50GS pickup = 51N pickup to avoid nuisance alarming (NOTE: max pickup = 160 A on 50GS).

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Beckwith M7679	Sectionalizer	7.1	<p>The sequence coordination feature (i.e., “Blink Save”) is not effective with reclosing cut out (1 shot/trip to lockout). Do not use sequence coordination feature.</p> <p>If traditional sectionalizer setup is desired:</p> <ol style="list-style-type: none"> Set to 1 count to trip – will open on first fault seen + dead-line/voltage loss. Phase (50P / 51P): <ul style="list-style-type: none"> Set 51P pickup (TOC) \leq 95% of source side LR phase MTT/pickup. Set 50P pickup (INST) = 51P pickup, no delay (0.00 seconds). Set phase load encroachment alarm to 83% of phase MTT (50P Element 4) with 60 s delay. When possible and load permitting, ensure setting can see EPSS EOL¹ (60% LLL, 70% LL) to next downstream protective device(s), looking at OH line sections beyond fuses/TripSavers. Ground (50N / 51N): <ul style="list-style-type: none"> Set 51N pickup (TOC) \leq 95% of source side LR ground MTT/pickup. Set 50N pickup (INST) = 51N pickup, no delay (0.00 seconds). 3-wire Systems: Set ground load encroachment alarm limit to 10% of ground MTT (50N Element 4) with 60 s delay. 4-wire systems: Set ground load encroachment alarm limit to 50% of ground MTT (50N Element 4) with 60 s delay. Ensure setting can see EPSS EOL¹ (50% LG, 50% LLG) to next downstream protective device(s), looking at OH line sections beyond fuses/TripSavers. Sensitive Ground (50GS): <ul style="list-style-type: none"> Even though disabled, set 50GS pickup = 51N pickup to avoid nuisance alarming (note: max pickup = 160A on 50GS). <p>Otherwise, change device from SECTIONALIZER mode to RECLOSER or SWITCH mode and follow appropriate guidance.</p>

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			<p>RECLOSER MODE 1: As an additional protective measure in high fire threat districts, perform the following additions to LR Mode 1.</p> <p>50GS / SGF / SEF:</p> <ul style="list-style-type: none"> 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2 \times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). Set time delay of furthest LR to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.) <ul style="list-style-type: none"> Depending on natural ground current, the 5 A or $1.2 \times$ pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault disabled. <p>79 Reclosing Relay:</p> <ul style="list-style-type: none"> PHASE: Only 1 reclose (2 shots/trips to lockout) maximum, with a 25 second reclose interval. GROUND: No reclosing (1 shot/trip to lockout). <p>Phase and Ground Load Encroachment Alarms:</p> <ul style="list-style-type: none"> Set phase load encroachment alarm to 83% of phase MTT (50P Element 4) with 60 s delay. 3-wire Systems: Set ground load encroachment alarm limit to 10% of ground MTT (50N Element 4) with 60 s delay. 4-wire systems: Set ground load encroachment alarm limit to 50% of ground MTT (50N Element 4) with 60 s delay. <p>Hot Line Tag (HLT)</p> <ul style="list-style-type: none"> Ensure HLT 50P is enabled and matches the 51P pickup value with 0.00 delay. Ensure HLT 50GS is enabled and matches the 51N pickup values with 0.00 delay.



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Beckwith M7679	Recloser	7.1	<p>RECLOSER MODE 1: As an additional protective measure in high fire threat districts, perform the following additions to LR Mode 1.</p> <p>50GS / SGF / SEF:</p> <ul style="list-style-type: none"> 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2 \times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). Set time delay of furthest LR to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> Depending on natural ground current, the 5 A or $1.2 \times$ pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault disabled. <p>79 Reclosing Relay:</p> <ul style="list-style-type: none"> PHASE: Only 1 reclose (2 shots/trips to lockout) maximum, with a 25 second reclose interval. GROUND: No reclosing (1 shot/trip to lockout). <p>Phase and Ground Load Encroachment Alarms:</p> <ul style="list-style-type: none"> Set phase load encroachment alarm to 83% of phase MTT (50P Element 4) with 60 s delay. 3-wire Systems: Set ground load encroachment alarm limit to 10% of ground MTT (50N Element 4) with 60 s delay. 4-wire Systems: Set ground load encroachment alarm limit to 50% of ground MTT (50N Element 4) with 60 s delay.



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			<p>Hot Line Tag (HLT):</p> <ul style="list-style-type: none"> Ensure HLT 50P is enabled and matches the 51P pickup value with 0.00 delay. Ensure HLT 50GS is enabled and matches the 51N pickup values with 0.00 delay. <p>RECLOSER MODE 2: Keep/reserve as alternate setting for switching use (e.g. abnormal switching), with following considerations:</p> <p>50GS / SGF / SEF:</p> <ul style="list-style-type: none"> 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2 \times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). Set time delay of furthest LR to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> Depending on natural ground current, the 5 A or $1.2 \times$ pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault disabled. <p>79 Reclosing Relay:</p> <ul style="list-style-type: none"> PHASE: Only 1 reclose (2 shots/trips to lockout) maximum, with a 25 second reclose interval delay. GROUND: No reclosing (1 shot/trip to lockout).

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			<p>Phase and Ground Overcurrent Alarms:</p> <ul style="list-style-type: none"> Set phase load encroachment alarm to 83% of phase MTT (50P Element 4) with 60 s delay. 3-wire Systems: Set ground load encroachment alarm limit to 10% of ground MTT (50N Element 4) with 60 s delay. 4-wire systems: Set ground load encroachment alarm limit to 50% of ground MTT (50N Element 4) with 60 s delay. <p>Hot Line Tag (HLT)</p> <ul style="list-style-type: none"> Ensure HLT 50P is enabled and matches the 51P pickup value with 0.00 delay. Ensure HLT 50GS is enabled and matches the 51N pickup values with 0.00 delay. <p>RECLOSER MODE 3:⁵ Repurpose for fast tripping. Where LR MODE 3 is already designed for other use (e.g. abnormal switching), work with DOE counterpart to maintain existing MTT values, when possible, while meeting fast-tripping guidance.</p> <p>51P Settings (Phase TOC):</p> <ul style="list-style-type: none"> Load permitting, set Phase MTT \leq 60% LLL / 70% LL faults within EPSS protection zone, removing fuses and TripSavers as delimiters for downstream OH line sections (i.e., “ignore” fuses/TripSavers, looking at OH line sections beyond fuses/TripSavers). Where load conflicts with above guidelines, set Phase MTT as close to $1.2 \times$ or +50 A normal maximum load (based on peak phase amps) as practical, to allow LR to “see” as many faults as possible in the extended protective zone.

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			<p>51N Settings (Ground TOC):</p> <ul style="list-style-type: none"> Set Ground MTT $\leq 50\%$ LG / 50% LLG faults within EPSS protection zone, removing fuses and TripSavers as delimiters for downstream OH line sections (i.e., “ignore” fuses/TripSavers, looking at OH line sections beyond fuses/TripSavers). <ul style="list-style-type: none"> Maintain ≤ 180 A (3-wire) or ≤ 240 A (4-wire) rule. <p>50P Settings (Phase INST):</p> <ul style="list-style-type: none"> Set phase load encroachment alarm limits to 83% of phase MTT value (Element 4) with 60 s delay. Set phase instantaneous equal to Phase MTT (51P). Set phase instantaneous time delay of the furthest protective device, including FuseSavers, to 0.00 seconds, and each consecutive source side protective device with an additional +0.02 to +0.05 second time delay, optimizing for margin. Protective device time delays not to exceed 0.10 second time delay (allows 0.02 s margin for up to 6 devices; consider SW MODE if >6 series protective devices). <p>50N Settings (Ground INST):</p> <ul style="list-style-type: none"> 3-wire Systems: Set ground load encroachment alarm limit to 10% of ground MTT (Element 4) with 60 s delay. 4-wire Systems: Set ground load encroachment alarm limit to 50% of ground MTT (Element 4) with 60 s delay. Set ground instantaneous equal to Ground MTT (51N). Set ground instantaneous time delay of the furthest protective device, including FuseSavers, to 0.00 seconds, and each consecutive source side protective device with an additional +0.02 to +0.05 second time delay, optimizing for margin. Protective device time delays not to exceed 0.10 second time delay (allows 0.02s margin for up to 6 devices; consider SW MODE if >6 series protective devices).

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			<p>50GS / SGF / SEF:</p> <ul style="list-style-type: none"> 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2 \times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). Set time delay of furthest LR to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.) <ul style="list-style-type: none"> Depending on natural ground current, the 5 A or $1.2 \times$ pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault disabled. <ul style="list-style-type: none"> Even though disabled, set 50GS pickup = 51N pickup to avoid nuisance alarming (Note: max pickup = 160 A on 50GS). <p>79 Settings (Reclosing)</p> <ul style="list-style-type: none"> No recloses – 1 shot/trip to lockout. <p>Cold-Load Pick-Up Settings:</p> <ul style="list-style-type: none"> Do not use. Operational practices are to address picking up cold load. <p>Hot Line Tag (HLT)</p> <ul style="list-style-type: none"> Ensure HLT 50P is enabled and matches the 51P pickup value with 0.00 delay. Ensure HLT 50GS is enabled and matches the 51N pickup values with 0.00 delay.



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Beckwith M7679	Switch	7.2, 8.0	<p>Consider RECLOSER mode and follow RECLOSER mode guidance; however, if kept as normal SWITCH mode, then:</p> <p>Phase (50P / 51P):</p> <ul style="list-style-type: none"> Set 51P pickup (TOC) \leq 95% of source side LR phase MTT/pickup. Set 50P pickup (INST) = 51P pickup, no delay (0.00 seconds). Set phase load encroachment alarm to 83% of phase MTT (50P Element 4) with 60 s delay. When possible and load permitting, ensure setting can see EPSS EOL¹ (60% LLL, 70% LL) to next downstream protective device(s), looking beyond fuses/TripSavers. <p>Ground (50N / 51N):</p> <ul style="list-style-type: none"> Set 51N pickup (TOC) \leq 95% of source side LR ground MTT/pickup. Set 50N pickup (INST) = 51N pickup, no delay (0.00 seconds). 3-wire Systems: Set ground load encroachment alarm limit to 10% of ground MTT (50N Element 4) with 60 s delay. 4-wire systems: Set ground load encroachment alarm limit to 50% of ground MTT (50N Element 4) with 60 s delay. Ensure setting can see EPSS EOL¹ (50% LG, 50% LLG) to next downstream protective device(s), looking beyond fuses/TripSavers. <p>Sensitive Ground (50GS):</p> <ul style="list-style-type: none"> Even though disabled, set 50GS pickup = 51N pickup to avoid nuisance alarming (note: max pickup = 160 A on 50GS).

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Beckwith M7679	Sectionalizer	7.2, 8.0	<p>The sequence coordination feature (i.e., “Blink Save”) is not effective with reclosing c/out (1 shot/trip to lockout). Do not use sequence coordination feature.</p> <p>If traditional sectionalizer setup is desired:</p> <ol style="list-style-type: none"> Set to 1 count to trip – will open on first fault seen + dead-line/voltage loss. Phase (50P / 51P): <ul style="list-style-type: none"> Set 51P pickup (TOC) \leq 95% of source side LR phase MTT/pickup. Set 50P pickup (INST) = 51P pickup, no delay (0.00 seconds). Set phase load encroachment alarm to 83% of phase MTT (50P Element 4) with 60 s delay. When possible and load permitting, ensure setting can see EPSS EOL¹ (60% LLL, 70% LL) to next downstream protective device(s), looking at OH line sections beyond fuses/TripSavers. Ground (50N / 51N): <ul style="list-style-type: none"> Set 51N pickup (TOC) \leq 95% of source side LR ground MTT/pickup. Set 50N pickup (INST) = 51N pickup, no delay (0.00 seconds). 3-wire Systems: Set ground load encroachment alarm limit to 10% of ground MTT (50N Element 4) with 60 s delay. 4-wire systems: Set ground load encroachment alarm limit to 50% of ground MTT (50N Element 4) with 60 s delay. Ensure setting can see EPSS EOL¹ (50% LG, 50% LLG) to next downstream protective device(s), looking at OH line sections beyond fuses/TripSavers. Sensitive Ground (50GS) <ul style="list-style-type: none"> Even though disabled, set 50GS pickup = 51N pickup to avoid nuisance alarming (note: max pickup = 160A on 50GS). <p>Otherwise, change device from SECTIONALIZER mode to RECLOSER or SWITCH mode and follow appropriate guidance.</p>



Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
			<p>RECLOSER MODE 1: As an additional protective measure in high fire threat districts, perform the following additions to LR Mode 1.</p> <p>50GS / SGF / SEF:</p> <ul style="list-style-type: none"> 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2 \times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). Set time delay of furthest LR to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> Depending on natural ground current, the 5 A or $1.2 \times$ pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: sensitive ground fault disabled. <p>79 Reclosing Relay:</p> <ul style="list-style-type: none"> PHASE: Only 1 reclose (2 shots/trips to lockout) maximum, with a 25 second reclose interval. GROUND: No reclosing (1 shot/trip to lockout). <p>Phase and Ground Load Encroachment Alarms:</p> <ul style="list-style-type: none"> Set phase load encroachment alarm to 83% of phase MTT (50P Element 4) with 60 s delay. 3-wire Systems: Set ground load encroachment alarm limit to 10% of ground MTT (50N Element 4) with 60 s delay. 4-wire systems: Set ground load encroachment alarm limit to 50% of ground MTT (50N Element 4) with 60 s delay. <p>Hot Line Tag (HLT)</p> <ul style="list-style-type: none"> Ensure HLT 50P is enabled and matches the 51P pickup value with 0.00 delay. Ensure HLT 50GS is enabled and matches the 51N pickup values with 0.00 delay.

Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
Beckwith M7679	Recloser	7.2 and greater, 8.0 and greater, and Form6 Retrofit revisions	<p>RECLOSER MODE 1: As an additional protective measure in high fire threat districts, perform the following additions to LR Mode 1.</p> <p>50GS / SGF / SEF:</p> <ul style="list-style-type: none"> 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2 \times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). Set time delay of furthest LR to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> Depending on natural ground current, the 5 A or $1.2 \times$ pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault disabled. <p>79 Reclosing Relay:</p> <ul style="list-style-type: none"> PHASE: Only 1 reclose (2 shots/trips to lockout) maximum, with a 25 second reclose interval. GROUND: No reclosing (1 shot/trip to lockout). <p>Phase and Ground Load Encroachment Alarms:</p> <ul style="list-style-type: none"> Set phase load encroachment alarm to 83% of phase MTT (50P Element 4) with 60 s delay. 3-wire Systems: Set ground load encroachment alarm limit to 10% of ground MTT (50N Element 4) with 60 s delay. 4-wire Systems: Set ground load encroachment alarm limit to 50% of ground MTT (50N Element 4) with 60 s delay. <p>Hot Line Tag (HLT):</p> <ul style="list-style-type: none"> Ensure HLT 50P is enabled and matches the 51P pickup value with 0.00 delay. Ensure HLT 50GS is enabled and matches the 51N pickup values with 0.00 delay.

Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
			<p>RECLOSER MODE 2: Keep/Reserve as alternate setting for switching use (e.g. abnormal switching), with following considerations:</p> <p>50GS / SGF / SEF:</p> <ul style="list-style-type: none"> 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2 \times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). Set time delay of furthest LR to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> Depending on natural ground current, the 5 A or $1.2 \times$ pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault disabled. <p>79 Reclosing Relay:</p> <ul style="list-style-type: none"> PHASE: Only 1 reclose (2 shots/trips to lockout) maximum, with a 25 second reclose interval delay. GROUND: No reclosing (1 shot/trip to lockout). <p>Phase and Ground Overcurrent Alarms:</p> <ul style="list-style-type: none"> Set phase load encroachment alarm to 83% of phase MTT (50P Element 4) with 60 s delay. 3-wire Systems: Set ground load encroachment alarm limit to 10% of ground MTT (50N Element 4) with 60 s delay. 4-wire systems: Set ground load encroachment alarm limit to 50% of ground MTT (50N Element 4) with 60 s delay. <p>Hot Line Tag (HLT)</p> <ul style="list-style-type: none"> Ensure HLT 50P is enabled and matches the 51P pickup value with 0.00 delay. Ensure HLT 50GS is enabled and matches the 51N pickup values with 0.00 delay.



Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
			<p>RECLOSER MODE 3:⁵ Repurpose for fast tripping. Where LR MODE 3 is already designed for other use (e.g., abnormal switching), work with DOE counterpart to maintain existing MTT values, when possible, while meeting fast-tripping guidance.</p> <p>51P Settings (Phase TOC):</p> <ul style="list-style-type: none"> Load permitting, set Phase MTT $\leq 60\%$ LLL / 70% LL faults within EPSS protection zone, removing fuses and TripSavers as delimiters for downstream OH line sections (i.e., “ignore” fuses/TripSavers, looking at OH line sections beyond fuses/TripSavers). Where load conflicts with above guidelines, set Phase MTT as close to $1.2 \times$ or $+50$ A normal maximum load (based on peak phase amps) as practical, to allow LR to “see” as many faults as possible in the extended protective zone. <p>51N Settings (Ground TOC):</p> <ul style="list-style-type: none"> Set Ground MTT $\leq 50\%$ LG / 50% LLG faults within EPSS protection zone, removing fuses and TripSavers as delimiters for downstream OH line sections (i.e., “ignore” fuses/TripSavers, looking at OH line sections beyond fuses/TripSavers). <ul style="list-style-type: none"> Maintain ≤ 180 A (3-wire) or ≤ 240 A (4-wire) rule. <p>50P Settings (Phase INST)</p> <ul style="list-style-type: none"> Set phase load encroachment alarm limits to 83% of phase MTT value (Element 4) with 60 s delay. Set phase instantaneous equal to Phase MTT (51P). Set phase instantaneous time delay of the furthest protective device, including FuseSavers, to 0.00 seconds, and each consecutive source side protective device with an additional $+0.02$ to $+0.05$ second time delay, optimizing for margin. Protective device time delays not to exceed 0.10 second time delay (allows 0.02 s margin for up to 6 devices; consider SW MODE if >6 series protective devices).



Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
			<p>50N Settings (Ground INST):</p> <ul style="list-style-type: none"> • 3-wire Systems: Set ground load encroachment alarm limit to 10% of ground MTT (Element 4) with 60 s delay. • 4-wire Systems: Set ground load encroachment alarm limit to 50% of ground MTT (Element 4) with 60 s delay. • Set ground instantaneous equal to Ground MTT (51N). • Set ground instantaneous time delay of the furthest protective device, including FuseSavers, to 0.00 seconds, and each consecutive source side protective device with an additional +0.02 to +0.05 second time delay, optimizing for margin. Protective device time delays not to exceed 0.10 second time delay (allows 0.02s margin for up to 6 devices; consider SW MODE if >6 series protective devices). <p>50GS / SGF / SEF:</p> <ul style="list-style-type: none"> • 3-Wire Systems: Set sensitive ground fault pickup to 5 A or $1.2 \times$ the maximum observed normal ground current reading in the previous 2 years (where historical data is available). Set time delay of furthest LR to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> ○ Depending on natural ground current, the 5 A or $1.2 \times$ pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. ○ Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. ○ When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. • 4-Wire Systems: sensitive ground fault disabled. <ul style="list-style-type: none"> ○ Even though disabled, set 50GS pickup = 51N pickup to avoid nuisance alarming (note: max pickup = 160 A on 50GS).

Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
			<p>SGI / DCD (Down Conductor Detection):</p> <ul style="list-style-type: none"> 3-Wire Systems: Reference the base settings of the most recently published file template for baseline values. <ul style="list-style-type: none"> Match the time delay for series devices to the slowest downstream device setting. Depending on natural ground current and harmonics, the base template settings may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. DCD tripping is only possible if SGF is set and enabled. If SGF is not appropriate/possible to set for a location, DCD cannot be used. 4-Wire Systems: DCD disabled or alarm only. Exceptions for some non-3-phase configurations. <p>79 Settings (Reclosing):</p> <ul style="list-style-type: none"> No recloses – 1 shot/trip to lockout. <p>Cold-Load Pick-Up Settings:</p> <ul style="list-style-type: none"> Do not use. Operational practices are to address picking up cold load. <p>Hot Line Tag (HLT):</p> <ul style="list-style-type: none"> Ensure HLT 50P is enabled and matches the 51P pickup value with 0.00 delay. Ensure HLT 50GS is enabled and matches the 51N pickup values with 0.00 delay.

Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
GE F60 & SEL 351 (IPAC)	NA	NA	<div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Group selectors not already active locally or via SCADA will require a relay test and clearance.</p> </div> <p>GROUP 1:</p> <p><u>Group 1 generic description – Normal with 1 reclose and SGF always enabled</u></p> <p>As an additional protective measure in high fire threat districts, perform the following additions to Group 1.</p> <p>50GS / SGF / SEF (Neutral IOC2 / 50G2P & 67G2D – Requires relay test/clearance):</p> <ul style="list-style-type: none"> • 3-Wire systems: Set Neutral IOC2 pickup to 5 A. Set time delay of furthest capable series device to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> ○ Limitations at the relay (i.e., selected CT Ratio, etc.) may limit the lower detection threshold. Make reasonable accommodations to get pickup set as close to guidance as feasible. ○ Depending on natural ground current, the 5 A pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. ○ Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. ○ When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. • 4-Wire Systems: sensitive ground fault (i.e., Neutral IOC2) disabled. <p>Phase and Ground Reclosing (79):</p> <ul style="list-style-type: none"> • Only 1 reclose (2 trips to lockout) maximum, with a 25 second reclose interval delay.

Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
			<p>GROUP 2:</p> <p><u>Group 2 generic description – Clearance/Bypass/Temp Gen</u></p> <p>Keep/reserve as alternate setting for switching use (e.g., abnormal switching, Temp Gen, PSPS), with the following considerations:</p> <p>Phase and Ground Reclosing (79):</p> <ul style="list-style-type: none"> Depending on desired application, either no recloses (1 trip to lockout) or only 1 reclose (2 trips to lockout) maximum, with a 25 second reclose interval delay. <p>GROUP 3:</p> <p><u>Group 3 generic description – Fast Tripping with SGF always enabled</u></p> <p>Re-purpose for fast tripping. Where GROUP 3 is already designed for other alternate uses (e.g., abnormal switching, Temp Gen, PSPS), “move” GROUP 3 settings into GROUP 6 and save/release to service.</p> <p>51P Settings (Phase TOC):</p> <ul style="list-style-type: none"> Load permitting, set Phase MTT $\leq 60\%$ LLL / 70% LL faults within EPSS protection zone, removing fuses and TripSavers as delimiters for downstream OH line sections (i.e., “ignore” fuses, looking at OH line sections beyond fuses/TripSavers). Where load conflicts with above guidelines, set Phase MTT as close to $1.2\times$ or $+50$ A normal maximum load (based on peak phase amps) as practical, to allow relay to “see” as many faults as possible in the extended protective zone. <p>51N Settings (Ground TOC):</p> <ul style="list-style-type: none"> Set Ground MTT $\leq 50\%$ LG / 50% LLG faults within EPSS protection zone, removing fuses and TripSavers as delimiters for downstream OH line sections (i.e., “ignore” fuses, looking at OH line sections beyond fuses/TripSavers). <ul style="list-style-type: none"> Maintain $\leq 180A$ (3-wire) or $\leq 240A$ (4-wire) rule.

Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
			<p>50P Settings (Phase INST): ³</p> <ul style="list-style-type: none"> Set phase instantaneous equal to Phase MTT. Set instantaneous time delay of the furthest protective device, including FuseSavers, to 0.00 seconds, and each consecutive source side protective device with an additional +0.02 to +0.05 second time delay, optimizing for margin. Protective device time delays not to exceed 0.10 second time delay (allows 0.02 s margin for up to 6 devices; consider SW MODE on field devices if >6 series protective devices). <p>50N Settings (Ground INST): ³</p> <ul style="list-style-type: none"> Set ground instantaneous equal to Ground MTT. Set ground instantaneous time delay of the furthest protective device, including FuseSavers, to 0.00 seconds, and each consecutive source side protective device with an additional +0.02 to +0.05 second time delay, optimizing for margin. Protective device time delays not to exceed 0.10 second time delay (allows 0.02 s margin for up to 6 devices; consider SW MODE on field devices if >6 series protective devices). <p>50GS / SGF / SEF (Neutral IOC2 / 50G2P & 67G2D – Requires relay test/clearance):</p> <ul style="list-style-type: none"> 3-Wire systems: Set Neutral IOC2 pickup to 5 A. Set time delay of furthest capable series device to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> Limitations at the relay (i.e. selected CT Ratio, etc.) may limit the lower detection threshold. Make reasonable accommodations to get pickup set as close to guidance as feasible. Depending on natural ground current, the 5 A pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault (i.e., Neutral IOC2) disabled.



Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
			<p>79 Settings (Reclosing):</p> <ul style="list-style-type: none">No recloses – 1 shot/trip to lockout. <p>GROUP 4:</p> <p><u>Group 4 generic description – Fast Tripping without SGF</u></p> <p>Re-purpose to use as copy of GROUP 3 (Fast Tripping), with no SGF functionality (i.e., SGF cut out). Where GROUP 4 is already designed for other alternate uses (e.g., abnormal switching, Temp Gen, PSPS), “move” GROUP 4 settings into GROUP 6 and save/release to service.</p> <p>GROUP 5:</p> <p><u>Group 5 generic description – Normal without SGF</u></p> <p>Re-purpose to use as copy of GROUP 1 (“Normal”), with no SGF functionality (i.e., SGF cut out).</p> <p>GROUP 6:</p> <p><u>Group 6 generic description – Spare with SGF</u></p> <p>When needed, use as alternate setting for switching use that is separate from GROUP 2 (e.g., different abnormal switching condition, Temp Gen, PSPS) or a duplication of GROUP 2 with SGF set.</p>

Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
SEL 451 & SEL 451 (SMP)	NA	NA	<p>GROUP 1:</p> <p><u>Group 1 generic description – Normal</u></p> <p>As an additional protective measure in high fire threat districts, perform the following additions to Group 1.</p> <p>50GS / SGF / SEF (Residual IOC2 / 50G2P & 67G2D – Requires relay test/clearance):</p> <ul style="list-style-type: none"> 3-Wire Systems: Set 50G2/Automation Variable pickup to 5 A. Set time delay of furthest capable series device to 5 seconds, and each consecutive source side LR with +1 sec additions (6 s, 7 s, 8 s, etc.). <ul style="list-style-type: none"> Limitations at the relay (i.e., selected CT Ratio) may limit the lower detection threshold. Make reasonable accommodations to get pickup set as close to guidance as feasible. Depending on natural ground current, the 5 A pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault (i.e., Residual Ground IOC2) disabled. <p>Phase and Ground Reclosing (79):</p> <ul style="list-style-type: none"> Only 1 reclose (2 trips to lockout) maximum, with a 25 second reclose interval delay. <p>GROUP 2:</p> <p><u>Group 2 generic description – Clearance/Bypass/Temp Gen</u></p> <p>Keep/reserve as alternate setting for switching use (e.g., abnormal switching, Temp Gen, PSPS), with the following considerations:</p> <p>Phase and Ground Reclosing (79):</p> <ul style="list-style-type: none"> Depending on desired application, either no recloses (1 trip to lockout) or only 1 reclose (2 trips to lockout) maximum, with a 25 second reclose interval delay.

Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
			<p>GROUP 3:</p> <p><u>Group 3 generic description – Normal EPSS/Fast Tripping</u></p> <p>51P Settings (Phase TOC):</p> <ul style="list-style-type: none"> Set TOC Element 2 51S1 to IMAXL. Load permitting, set Phase MTT $\leq 60\%$ LLL / 70% LL faults within EPSS protection zone, removing fuses and TripSavers as delimiters for downstream OH line sections (i.e., “ignore” fuses, looking at OH line sections beyond fuses/TripSavers). Where load conflicts with above guidelines, set Phase MTT as close to $1.2\times$ or $+50$ A normal maximum load (based on peak phase amps) as practical, to allow relay to “see” as many faults as possible in the extended protective zone. <p>51G Settings (Ground TOC)</p> <ul style="list-style-type: none"> Set TOC Element 2 51S2 to 3I0L. Set Ground MTT $\leq 50\%$ LG / 50% LLG faults within EPSS protection zone, removing fuses and TripSavers as delimiters for downstream OH line sections (i.e., “ignore” fuses, looking at OH line sections beyond fuses/TripSavers). <ul style="list-style-type: none"> Maintain ≤ 180A (3-wire) or ≤ 240A (4-wire) rule. <p>50P1 Settings (Phase INST): ³</p> <ul style="list-style-type: none"> Set phase instantaneous equal to Phase MTT. Set instantaneous time delay of the furthest protective device, including FuseSavers, to 0.00 seconds, and each consecutive source side protective device with an additional $+0.02$ to $+0.05$ second time delay, optimizing for margin. Protective device time delays not to exceed 0.10 second time delay (allows 0.02 s margin for up to 6 devices; consider SW MODE on field devices if >6 series protective devices).



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Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
			<p>50G1 Settings (Ground INST): ³</p> <ul style="list-style-type: none"> Set ground instantaneous equal to Ground MTT. Set ground instantaneous time delay of the furthest protective device, including FuseSavers, to 0.00 seconds, and each consecutive source side protective device with an additional +0.02 to +0.05 second time delay, optimizing for margin. Protective device time delays not to exceed 0.10 second time delay (allows 0.02 s margin for up to 6 devices; consider SW MODE on field devices if >6 series protective devices). <p>50GS / SGF / SEF (Residual IOC2 / 50G2P & 67G2D – Requires relay test/clearance):</p> <ul style="list-style-type: none"> 3-Wire Systems: Set 50G2/Automation Variable pickup to 5 A. Set time delay of furthest capable series device to 5 seconds, and each consecutive source-side LR with +1 sec additions (6s, 7s, 8s, etc.) <ul style="list-style-type: none"> Limitations at the relay (i.e., selected CT Ratio) may limit the lower detection threshold. Make reasonable accommodations to get pickup set as close to guidance as feasible. Depending on natural ground current, the 5 A pickup may be increased to a suitable value that avoids nuisance tripping. Evaluate on a case-by-case basis. Furthest device timing may be set slower as well depending on circuit dependencies. Evaluate on case-by-case basis. When setting, ensure the timing is set appropriately for adjacent SGF-enabled devices on the circuit. 4-Wire Systems: Sensitive ground fault (i.e., Residual IOC2) disabled. <p>79 Settings (Reclosing)</p> <ul style="list-style-type: none"> No recloses – 1 shot/trip to lockout. <p>GROUP 4:</p> <p><u>Group 4 generic description – Alternate EPSS/Fast Tripping</u></p> <p>When needed, use as alternate setting for switching use that is separate from GROUP 3 (e.g., different abnormal switching condition, Temp Gen, PSPS).</p>



Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Controller Type	Normal Mode	Rev	Protection / Device Settings
Siemens FuseSaver	NA	NA	FuseSavers shall be placed in "FAST-SINGLE" protection mode for EPSS. Existing FS Policy file while in "FAST-SINGLE" mode is to trip in <0.1 s for load/fault currents > 2.5× pickup. For the purpose of device coordination and margin, assume the FuseSaver responds to a fault in 0.0 seconds.
SEL 251 / Basler	NA	NA	Guidance to be provided on a case-by-case basis.
Electro-Mechanical	NA	NA	Guidance to be provided on a case-by-case basis.
Interrupter	Interrupter	Any	When interrupter feeds downstream OH line sections, guidance to be provided on a case-by-case basis.



Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

Footnotes:

- ¹ EPSS EOL and EPSS Protective Zone refer to the downstream overhead line sections that are within a fire area boundary, ignoring non-EPSS and non-gang operated devices.
 - a. It does not include UG line sections, nor OH that is not in a fire area.
 - b. Non-EPSS and non-gang operated devices include fuses, TripSavers, 3A controlled LR's, etc.
- ² The minimum delay on an F6 control is 0.01 seconds not 0.0 as it is in the Beckwith and the FuseSaver. As a result, the most series protective/recloser mode devices are reduced by one.
- ³ Minimum delay on a 4C control is 1 cycle and can only be incremented in full cycle increments.
- ⁴ Where possible, set the delay to accommodate the physical operating time of other EPSS devices in series.
 - a. Example: Oil tanks take longer to clear, so give a longer time separation on an upstream device.
- ⁵ F6 controls (through at least revision 30) have delay compensation logic built in for the time delay. Through testing the compensation is ~17 ms but actual time varies based on fault duty.
 - a. Example: If a time delay programmed into the F6 control of 0.04 s, the control will actually send the trip signal at 0.023 s.
 - b. This creates a conflict coordinating with other devices that do not do this compensation. Thus, to follow the recommended intervals, F6 controls should get an additional 0.017 s programmed into the actual setting file.
 - c. This would allow for F6 controlled devices to potentially have a programmed delay of >0.1 s (up to a maximum of 0.117).
- ⁶ M7679 Controls revision 7.2 and greater no longer have the same logic between all recloser profiles. It is no longer appropriate to use the copy settings feature in the software to copy setpoints between groups.
- ⁷ Some EPSS devices have been designated as protecting Non-Tier Buffer areas. Non-Tier Buffer areas are areas that are **not** explicitly within our defined fire areas but where we *may* want to enable EPSS/Fast Tripping Schemes, depending on the conditions. The conditions to enable these devices are more elevated and as such, the settings can vary from the above guidance:
 - a. When possible, accommodate Non-Tier Buffer devices to coordinate delays in device operations to optimize reliability.
IF coordination with Non-Tier Buffer devices is **not** feasible,
THEN set the delay to match immediate downstream EPSS devices as a conservative approach to faster tripping for phase and ground elements. For SGF (if applicable) set the time delay 1 second above the downstream device in an effort to coordinate.

Extra Efforts / FAQs:

- Time permitting or if feasible, change normal SWITCH mode LR's to normal RECLOSER mode – may require additional effort to add to non-reclose scripts.
- Treat TripSavers similarly as fuses, due to their single-phase tripping nature.
- Variations from the above guidelines should be noted/documented where the setting record is stored.



Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

REVISION NOTES

Where?	What Changed?
Cooper 4C, Recloser, Any	<p>Normal Profile:</p> <ul style="list-style-type: none"> 51 P and 51N Settings: Added EPSS to protection zone. 50GS / SGF / SEF: Revised settings for 3-Wire Systems. <p>Alternate Profile:</p> <ul style="list-style-type: none"> 50GS/SGF/SEF and 50GS / SGF / SEF (Optional / Case Dependent): Revised settings for 3-Wire Systems.
Cooper Form 6, Recloser, 26, 27, 28, OR 30	<p>Normal Profile, ALT 1, and ALT 3:</p> <ul style="list-style-type: none"> 50GS/SGF/SEF: Revised settings for 3-Wire Systems. <p>ALT3:</p> <ul style="list-style-type: none"> 51P Settings (Phase TOC) and 51N Settings (Ground TOC): Added EPSS to protection zone.
Beckwith M7679, Sectionalizer, 7.1	<p>RECLOSER MODE 1:</p> <ul style="list-style-type: none"> 50GS/SGF/SEF: Revised settings for 3-Wire Systems.
Beckwith M7679, Recloser, 7.1	<p>RECLOSER MODE 1/RECLOSER MODE 2/RECLOSER MODE 3:</p> <ul style="list-style-type: none"> 50GS/SGF/SEF, Revised settings for 3-Wire Systems. <p>RECLOSER MODE 3:</p> <ul style="list-style-type: none"> 51P Settings (Phase TOC)/ 51N Settings (Ground TOC): Added EPSS to protection zone.
Beckwith M7679, Switch, 7.2, 8.0	Added new section
Beckwith M7679, Sectionalizer, 7.2, 8.0	Added new section
Beckwith M7679, Recloser, 7.2 and greater, 8.0 and greater, and Form 6 Retrofit revisions	Added new section



Enhanced Powerline Safety Settings (EPSS) Enablement Criteria

Attachment 1, Application Guide Device Profile Settings

REVISION NOTES (continued)

Where?	What Changed?
GE F60 & SEL 351 (IPAC)	<p>GROUP1:</p> <ul style="list-style-type: none"> 50GS / SGF / SEF (Neutral IOC2 / 50G2P & 67G2D – Requires relay test/clearance): Revised settings for 3-Wire Systems. <p>GROUP 3:</p> <ul style="list-style-type: none"> 51P Settings (Phase TOC)/ 51N Settings (Ground TOC): Added EPSS to protection zone. 50GS / SGF / SEF (Neutral IOC2 / 50G2P & 67G2D – Requires relay test/clearance): Revised settings for 3-Wire Systems.
SEL 451 & SEL 451 (SMP)	Added new section
Footnotes	<ul style="list-style-type: none"> New Footnote 1 New Footnote 6