

LOOP Glossary

Actual bus restoration time—the duration, in minutes, from event initiation until offsite electrical power is restored to a safety bus. This is the actual time taken to restore offsite power from the first available source to a safety bus.

Consequential loss of offsite power initiating event (LOOP-IE-C)—a LOOP-IE in which the LOOP is the direct or indirect result of a plant trip. For example, the event is consequential if the LOOP occurred during a switching transient (i.e., main generator tripping) after a unit trip from an unrelated cause. In this case, the LOOP would not have occurred if the unit remained operating. LOOP-IE-C is a subset of LOOP-IE events.

Extreme-weather-related loss of offsite power event—a LOOP event caused by extreme weather. Examples of extreme weather are hurricanes, strong winds greater than 125 miles per hour, and tornadoes. Extreme-weather-related LOOP events are also distinguished from severe-weather-related LOOP events by their potential to cause significant damage to the electrical transmission system and long offsite power restoration times. Extreme-weather-related events are included in the weather-related events category in this volume.

Functional loss of offsite power initiating event—a LOOP occurring while a plant is at power and also involving a reactor trip. The LOOP can cause the reactor to trip or both the LOOP event and the reactor trip can be part of the same transient.

Grid-related loss of offsite power event—a LOOP event in which the initial failure occurs in the interconnected transmission grid that is outside the direct control of plant personnel. Failures that involve transmission lines from the site switchyard are usually classified as switchyard-centered events if plant personnel can take actions to restore power when the fault is cleared. However, the event should be classified as grid related if the transmission lines fail from voltage or frequency instabilities, overload, or other causes that require restoration efforts or corrective action by the transmission operator.

Initial plant fault loss of offsite power initiating event (LOOP-IE-I)—a LOOP-IE in which the LOOP event causes the reactor to trip. LOOP-IE-I is a subset of LOOP-IE events. NUREG/CR-5496 uses the term “initial plant fault” to distinguish these events from other “functional impact” events (LOOP-IE-C and LOOP-IE-NC).

Loss of offsite power (LOOP) event—the simultaneous loss of electrical power to all unit safety buses (also referred to as emergency buses, Class 1E buses, and vital buses) requiring all emergency power generators to start and supply power to the safety buses. The nonessential buses may also be de-energized as a result of this.

Loss of offsite power initiating event (LOOP-IE)—a LOOP occurring while a plant is at power and also involving a reactor trip. The LOOP can cause the reactor to trip or both the LOOP event and the reactor trip can be part of the same transient. Note that this is the NUREG/CR-5750 definition of a functional impact LOOP initiating event (as opposed to an initial plant fault LOOP initiating event).

Loss of offsite power no trip event (LOOP-NT)—a LOOP occurring while a plant is at power but not involving a reactor trip. (Depending upon plant design, the plant status at the time

of the LOOP, and the specific characteristics of the LOOP event, some plants have been able to remain at power given a LOOP.)

Loss of offsite power shutdown event (LOOP-SD)—a LOOP occurring while a plant is shutdown.

Momentary loss of offsite power event—a LOOP event in which the potential bus recovery time is less than 2 min.

Nonconsequential loss of offsite power initiating event (LOOP-IE-NC)—a LOOP-IE in which the LOOP occurs following, but is not related to, the reactor trip. LOOP-IE-NC is a subset of LOOP-IE events.

Partial loss of offsite power (PLOOP) event—the loss of electrical power to at least one but not all unit safety buses that requires at least one emergency power generator to start and supply power to the safety bus(es).

Plant-centered loss of offsite power event—a LOOP event in which the design and operational characteristics of the nuclear power plant unit itself play the major role in the cause and duration of the loss of offsite power. Plant-centered failures typically involve hardware failures, design deficiencies, human errors, and localized weather-induced faults such as lightning. The line of demarcation between plant-centered and switchyard-centered events is the nuclear power plant main and station power transformers high-voltage terminals.

Potential bus recovery time—the duration, in minutes, from the event initiation until offsite electrical power could have been recovered to a safety bus. This estimated time is less than or equal to the actual bus restoration time.

Severe-weather-related loss of offsite power event—a LOOP event caused by severe weather, in which the weather was widespread, not just centered on the site, and capable of major disruption. Severe weather is defined to be weather with forceful and nonlocalized effects. A LOOP is classified as a severe-weather event if it was judged that the weather was widespread, not just centered at the power plant site, and capable of major disruption. An example is storm damage to transmission lines instead of just debris blown into a transformer. This does not mean that the event had to actually result in widespread damage, as long as the potential was there. Examples of severe weather include thunderstorms, snow, and ice storms. Lightning strikes, though forceful, are normally localized to one unit, and so are coded as plant centered or switchyard centered. LOOP events involving hurricanes, strong winds greater than 125 miles per hour, and tornadoes are included in a separate category—extreme-weather-related LOOPS. Severe-weather-related events are included in the weather-related category in this volume.

Station blackout (SBO)—the complete loss of ac power to safety buses in a nuclear power plant unit. Station blackout involves the loss of offsite power concurrent with the failure of the onsite emergency ac power system. It does not include the loss of available ac power to safety buses fed by station batteries through inverters or successful high pressure core spray operation.

Sustained loss of offsite power event—a LOOP event in which the potential bus recovery time is equal to or greater than 2 min.

Switchyard-centered loss of offsite power event—a LOOP event in which the equipment, or human-induced failures of equipment, in the switchyard play the major role in the loss of offsite

power. Switchyard-centered failures typically involve hardware failures, design deficiencies, human errors, and localized weather-induced faults such as lightning. The line of demarcation between switchyard-related events and grid-related events is the output bus bar in the switchyard.

Switchyard restoration time—the duration, in minutes, from event initiation until offsite electrical power is actually restored (or could have been restored, whichever time is shorter) to the switchyard. Such items as no further interruptions to the switchyard, adequacy of the frequency and voltage levels to the switchyard, and no transients that could be disruptive to plant electrical equipment should be considered in determining the time.

Weather-related loss of offsite power event—a LOOP event caused by severe or extreme weather.