

CALCULATION OF MAJOR EVENT DAYS

1 INTRODUCTION

The following process (“Beta Method”) is used to identify major event days. This is a methodology developed by IEEE, available in IEEE Standard 1366TM-2003, “IEEE Guide for Electric Power Distribution Reliability Indices.” Its purpose is to allow major events to be studied separately from daily operation and, in the process, to better reveal trends in daily operation that would be hidden by the large statistical effect of major events. This approach supersedes previous major event definitions.

2 MAJOR EVENT DAYS

- a Definition. A major event day is a day when the daily system SAIDI exceeds a threshold value, T_{MED} . The SAIDI index is used as the basis of this definition, since it leads to consistent results regardless of utility size and because SAIDI is a good indicator of operational and design stress. Even though SAIDI is used to determine major event days, all indices should be calculated based on removal of the identified days.
- b Calculation of Threshold. In calculating daily system SAIDI, any interruption that spans multiple days is accrued to the day on which the interruption begins. The major event day identification threshold value, T_{MED} , is calculated at the end of each reporting period as follows:
 - (1) Collect values of daily SAIDI for five sequential years ending on the last day of the last complete reporting period. If fewer than five years of historical data are available, use all available historical data until five years of historical data are available.
 - (2) Only those days that have a positive SAIDI/day value will be used to calculate the T_{MED} . Exclude the days that have no interruptions.
 - (3) Take the natural logarithm, of each daily SAIDI value in the data set.
 - (4) Find α (Alpha), the average of the logarithms—also known as the log-average—of the data set.
 - (5) Find β (Beta), the standard deviation of the logarithms—also known as the log-standard deviation—of the data set.
 - (6) Compute the major event day threshold, T_{MED} , using this equation:

$$T_{MED} = e^{(\alpha+2.5\beta)}$$

- (7) Any day with daily SAIDI greater than the threshold value T_{MED} that occurs during the subsequent reporting period is classified as a major event day.

DEFINITIONS

Interruption – A loss of electricity for any period longer than 5 minutes.

Power supply interruption – Any interruption originating from the transmission system, sub-transmission system, or the substation, regardless of ownership.

Planned interruption – Any interruption scheduled by the distribution system to safely perform routine maintenance.

All other interruptions – All interruptions excluding power supply, major event, and those that are planned.

Major event – An interruption or group of interruptions caused by conditions that exceed the design and operational limits of a system. See IEEE Standard 1366-2003 and Exhibit E of this document.

Major event day – As defined by IEEE Standard 1366, a day in which the daily SAIDI exceeds a threshold value, T_{MED} . For the purpose of calculating daily system SAIDI, any interruption that spans multiple calendar days is accrued to the day on which the interruption began. Statistically, days having a daily system SAIDI greater than T_{MED} are days when the energy delivery system experiences stresses beyond those normally expected—such as severe weather. Activities that occur on major event days should be analyzed and reported separately.

Outage – The state of a component when it is not available to perform its intended function as a result of an event directly associated with that component. An outage could cause an interruption of service to customers, depending on system configuration. This definition does not apply to generation outages.

FORMS

RUS Form 7, “Financial and Statistical Report”

RUS Form 300, “Rating Review Summary”

