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Application of the U.S. National Lightning Detection Network for an Electric Power Utility's Lightning Alert System

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Abstract

Duke Energy is a major U.S. electric power utility with a service territory spanning 6 states, with additional power generating assets located across the continental United States. Duke Energy recognizes lightning as a very serious safety hazard and providing adequate warning of impending electrical storms as a necessity. Lightning is considered an eminent threat not only to Duke's power generation facilities but more importantly to its employees. Equipped with information from the National Lightning Detection Network (NLDN), Duke has established a system to provide warnings, in a timely manner, of nearby lightning activity. Located at Duke Energy's weather office in Charlotte, North Carolina, a lightning alert system has been put in place which utilizes an internal software that pushes out automated alerts via email and/or text message to provide alerts and warnings to employees located at Duke's various power generation sites. The software uses a fixed location (typically a central latitude/longitude for a site) and radial rings around that central point. Two rings are used with varying diameters that are dependent on unit-specific recommendations. These recommendations are based on the type of work being performed at Duke's various electric power generation facilities and consists of transmission and plant-based sites as well as solar photovoltaic and wind turbine electric power generation facilities. The larger outer ring alerts employees to prepare for suspension of work. A second smaller ring instructs employees to suspend work and seek safe shelter. Resumption of work activities are allowed only 30 minutes after the last lightning strike. With this lightning alert system in place, Duke Energy has equipped its power generation facilities and their employees with a system to safeguard against the hazards posed by lightning.

Topic Areas

Applications of Lightning Data: Insurance Claims, Fire Risk, Mining, Wind Farms, etc.

Submission Format

No preference