

Distribution network automation helps combat typhoons



Overview

This paper presents a method for predicting power-grid failure rates in typhoons and water logs and suggests a strategy for improving network elasticity after the disaster. It is crucial for the operation and maintenance of power distribution systems during typhoon and. To address the decline in power supply capability of distribution networks during typhoons, it is necessary to fully utilize distributed resources in distribution networks and enhance the resilience of distribution networks during disasters from multiple aspects such as comprehensive power supply. To improve the accuracy of typhoon-induced hazard intensity forecasting, an LSTM network enhanced with multi-scale attention (LSTM-MSA) is developed, which overcomes the deficiency of the traditional LSTM model that cannot capture the local attention mechanism.



Article Content

Strategies for Improving the Resiliency of Distribution Networks in ...

This paper presents a method for predicting power-grid failure rates in typhoons and water logs and suggests a strategy for improving network elasticity after the disaster. It is crucial for the

Multi-dimensional Resilience Enhancement Strategy for Distribution ...

Based on the typhoon asymmetric wind field disaster model, a dual-layer architecture of distribution networks is proposed based on the improved normal constraint method to support multi-dimensional

Study on the Resilience Model of Power Distribution Networks

This study analyzes the resilience model of power distribution networks based on the structural reliability concept. First, the load impact of conductors and towers is analyzed using a physical model of

(PDF) Risk analysis of distribution network outages under a typhoon ...

The typhoon-rainstorm-flood disaster chain poses a significant flooding risk to urban distribution network (DN) equipment, often leading to power system outages. The increasing

Study on the Resilience Model of Power Distribution Networks Under ...

Distribution line damage usually lasts for a long time. Hence, the core of resilience modeling work is to select fault scenarios with a high probability of occurring in the power distribution

Enhancing distribution system resilience against extreme weather

Distribution system infrastructures are vulnerable to extreme weather events, such as hurricane, ice coating, flood, and wildfires. Resilience is a me

Study on the Resilience Model of Power Distribution Networks Under ...

Pre-disaster reinforcement often uses physical means to improve defense, such as increasing distribution line/tower strength. Pre-disaster early warning is committed to establishing a

Research on Optimal Control Strategies on Distribution

Among these extreme events, typhoons represent one of the most destructive hazards for distribution networks, with particularly significant impacts

Resilience Enhancement for Distribution Networks

The increasing prevalence of extreme weather events poses significant challenges to the stability of distribution networks (DNs). To enhance

Review of big-data and AI application in typhoon-related disaster risk ...

Macao, like many coastal cities, is prone to typhoons, and the city has been using big data and AI to improve its disaster risk reduction (DRR) efforts. One example of the use of big data and AI

Enhancing pre-disaster resilience of distribution networks considering ...

To address this limitation, this study proposes a pre-disaster resilience enhancement scheme for DCPS that integrates the temporal characteristics of typhoon evolution and cyber

Enhancing resilience of power-transportation coupled networks to ...

Most studies focus on distribution networks (DNs) without considering the important coupling relationship between transportation networks (TNs) and DNs. This paper addresses this

Reinforcement Strategy for Distribution Networks with Distributed ...

Typhoon disasters can easily cause large-scale line failures in distribution networks, so it is crucial to formulate scientific reinforcement plans. This paper proposes a reinforcement strategy for distribution

Enhancing pre-disaster resilience of distribution networks considering ...

Existing studies on enhancing pre-disaster resilience of distribution networks ignore the temporal characteristics of typhoon evolution and the system's real-time response during disasters,

Differentiated Reinforcement Method for Distribution Networks Based

In order to improve the resilience of distribution networks against typhoon disasters, a differentiated reinforcement method for distribution networks based on an improved proximal policy

Resilience enhancement of distribution networks based

This paper proposes a scheme that utilizes microgrids and is based on demand response to enhance the resilience of distribution networks.

Resilience Enhancement of Coordinated Transmission and

Abstract: The occurrence of high-impact low-probability (HILP) natural disasters such as typhoons poses a significant threat to the secure operation of transmission and distribution (T& D) network system.

Resilience enhancement of distribution network under typhoon

Therefore, the utilities aim to develop optimization models that can enhance the resilience of distribution networks against typhoon disaster. In recent years, the concept of

Research on the Impacts of Distribution Network Automation on the ...

The deployment of distribution network automation technology, which leverages the combined power of smart devices, communication networks, and automated control systems, enables continuous

Stronger typhoons, weaker electricity systems? A review of the

Climate-related extreme weather events, such as typhoons and their consequent flooding and storm surges, exert significant pressure on electricity systems in these vulnerable regions,

Risk analysis of distribution network outages under a

By analysing the impact of the typhoon-rainstorm-flood disaster chain on the urban distribution network (DN), we propose a method for assessing outage risk before a typhoon makes

Method for enhancing distribution network resilience under typhoon ...

To improve the accuracy of typhoon-induced hazard intensity forecasting, an LSTM network enhanced with multi-scale attention (LSTM-MSA) is developed, which overcomes the deficiency of the

A comprehensive strategy for the distribution network resilience ...

To enhance the distribution network resilience against typhoon attacks, this paper proposes a resilience-oriented two-stage robust optimization model, in which resilience-constrained

Risk analysis of distribution network outages under a

4.3 Distribution network outage risk analysis Based on the influencing factors shown in Figure 6, we analysed and quantified the distribution network (DN) outage risk under the

Review of distribution network's resilience based on typhoon disaster

This paper mainly studies the influence of typhoon disaster on distribution network, and summarizes the research results of existing resilient distribution network in typhoon model, pre

Review on distribution network damage prediction and assessment

At present, the prediction technology of distribution network loss under the influence of typhoon has been improved constantly and the result of high precision prediction has been obtained.

A robust resilient-oriented design for the cyber-physical distribution ...

To enhance the resilience of cyber-physical distribution systems against typhoons, this paper proposes a resilience-oriented robust optimization model, in which planning-operational...

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