Toward a margin-based VaR for the unit maintenance scheduling of power provider enterprises

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Abstract

Value at Risk (VaR) provides a powerful benchmarking index for risk management purposes. In the Power Provider Enterprise (PPE) sector, risk assessment is traditionally performed using some form of probability-based technique rather than by applying a margin-based risk approach over the course of the entire year. Accordingly, this study presents a VaR assessment model to facilitate a margin-based risk assessment approach to the unit maintenance scheduling (UMS) task. The feasibility of the proposed method is verified using the IEEE Reliability Test System (RTS). The simulation results confirm the effectiveness and practical benefit of the proposed approach.

Keywords: Risk management, value at risk, levelized risk model, unit maintenance scheduling.

1. Introduction

Risk management plays an essential role in the project management domain of many academic, business and industrial fields [1]. Risk assessment is traditionally performed using some form of probability-based method. However, the Value at Risk (VaR) methodology has emerged as a powerful alternative to such methods over the past decade [2]. Such is its popularity nowadays, that some researchers have coined the phrase “the VaR resolution” to describe the changes which it is bringing to the risk assessment field [3], while others have contended that VaR represents the new benchmark for controlling market risk [4].

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