

电力市场

基于诱导有序加权平均算子的最优组合短期负荷预测

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摘要:

为提高预测精度, 弥补现有组合预测方法中单项预测方法在各预测点的加权系数恒定等不足, 提出了一种新的组合预测方法——基于诱导有序加权平均算子(induced ordered weighted averaging operator, IOWA)的短期负荷最优组合预测方法。该方法针对同一预测方法在不同时刻的预测效果不同, 按照各单项方法在不同时刻预测精度的高低进行有序赋权, 实现方法的优缺点互补, 降低预测结果对某一方法的依赖性, 达到提高预测精度的目的。文中基于IOWA算子的组合预测方法, 建立相应的确定权系数的优化模型, 给出采用现代内点法解算该优化模型的过程及步骤。实际应用结果表明, 该方法能有效提高组合预测精度且计算时间短。

关键词: 负荷预测 组合预测 优化模型 诱导有序加权平均算子

An Optimal Combinational Model for Short-Term Load Forecasting Based on Induced Ordered Weighted Averaging Operator

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Abstract:

To improve forecasting accuracy and remedy the defects of single forecasting methods consisting of existing combinational forecasting methods that the weighting coefficients at different forecasted points are regarded as constant, a new optimal combinational method for short-term load forecasting based on induced ordered weighted averaging operator (IOWA) is proposed. In allusion to the fact that the forecasted results are different by the same forecasting method at different time, the ordered weighting is applied to each single forecasting method according to its forecasting accuracy at different time to implement the complementation of their merits and demerits to reduce the dependence of forecasted result on a certain forecasting method and to improve the forecasting accuracy. According to the proposed forecasting method based on IOWA operator, an optimal forecasting model with corresponding weighting coefficients is built and the process and procedures of solving the proposed model by modern interior point method are given. Practical application results show that the proposed method can effectively improve the accuracy by combinational forecasting, and the computation time is shortened.

Keywords: load forecasting combinational forecasting optimization model induced ordered weighted averaging operator (IOWA)

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