Ranking Method for Peak-Load Shifting Considering Different Types of Data

Management measures for peak-load shifting are employed to alleviate power shortages during the peak hours in some countries with power-supply shortages, such as China. One of the most popular measures is to rank the electricity users with respect to their relative importance in the society. In ranking the sequence, the decision maker may encounter difficulties because the types of data employed for this purpose are not consistent. Thus, a ranking method capable of handling different types of data is necessary and presented in this paper. To prioritize electricity users in a reasonable manner, an evaluation system for the purpose of peak-load shifting is established from three aspects: economic, social, and environmental impacts. Then a mixed-data dominance method is employed in this work to determine the comprehensive closeness degree of each user under each index, and an optimal comprehensive weight model is then presented with both the subjective weights and objective weights. Based on the attained optimal comprehensive weight and the comprehensive closeness degree, the weighted closeness degree of each electricity user can be calculated and the final ranking result for all electricity users obtained. The proposed approach is demonstrated by actual data of Guangzhou city in China.

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