Multi-agent approach to the planning of power transmission expansion

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Abstract-

Recently, deregulation and restructuring have become unavoidable trends to the power industry in order to increase its efficiency, to reduce operation costs, or to provide customers with better services. The once centralized system planning and management must be remodeled to reflect the changes in the market environment. We have proposed and developed a multi-agent system to assist players, such as, owners of power generation stations, owners of transmission lines, and groups of customers, to select partners to form coalitions. The system provides users with a cooperation plan and its associated cost allocation plan for the users to support their decision making process. The Bilateral Shapley value was selected as the theoretical foundation to develop the model. The multi-agent system was developed by the combination of two software platforms: IDEAS and Javier Contreras\' personal Tcl/Tk. See homepages: http://www.iit.upco.es/~javierc and/or http://www.eecs.berkeley.edu/~javier for more details.

Index Terms- Transmission planning, bilateral Shapley values, multi-agent systems

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