

Preface

World-wide unprecedented reform and restructuring of the electric power industry has imposed tremendous challenges on the operation of power systems under this new environment. Regardless of the market structures that may emerge in various parts of the world, system security, reliability and quality of supply must be maintained. Faced by an increasingly complicated co-existence of technical and economical considerations, new computational tools and software systems are in great demand by generators, system operators, retailers, and other market participants to meet operating, scheduling, planning, and financial requirements.

In recent years there have been many books published on deregulation of the power industry but most of them placed emphasis on the market structure and policy issues. From an engineering point of view, how to develop effective computational tools for efficiently operating restructured power systems is still a big challenge. During the past several years, with funding from both research council and industry, we have been working on different computational models and methods for operation and control of market-oriented power systems. This book, resulting from these successful projects, covers all the major operational issues, such as scheduling and dispatch, congestion management, available transfer capability calculation, price forecasting and optimal bidding strategies. In addition, a comprehensive review of international research and world-wide industry practice is presented in each chapter before describing our methods, so as to give readers a broader state-of-the-art in this exciting field. Thus this book should be a useful reference for professional managers and engineers involved in the operation and control of market-oriented power systems. It would also be of considerable value to post-graduate researchers.

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