

Power System Restructuring and Deregulation: Trading, Performance & Information Technology

*Power System Restructuring and Deregulation:
Trading, Performance & Information Technology*

Edited by Loi Lei Lai,

John Wiley & Sons Ltd., 2001, xxix + 468 pp.

ISBN:0 471 49500X

The past fifteen years have seen the first major restructuring of the electric utility industry since it started to develop in the late 1800s. This has brought about significant changes in how the entire electric energy business is conducted in various parts of the world.

Up until the advent of restructuring, the power systems were operated as vertically integrated entities, incorporating generation, transmission and distribution, purely on the consideration of efficiency, reliability and security of supply enhanced by research and implementation of improved technology.

Restructuring and deregulation has brought in the notions of competition and marketing strategies in addition to introducing new technical considerations in the operation of these independently owned but operationally interconnected parts of the system under the control of another independent authority with the generic name of Independent System Operator (ISO). ISO holds a unique position of having the responsibility and authority for secure operation of the system without owning it.

Such far-reaching changes have resulted in the development of completely new strategies for the operation of the power systems, marketing of electric energy, and planning, operation and maintenance of the system over a relatively brief period. Recent events in California have highlighted the uncertainty and enormous challenges facing the electric power industry during the transition period. It is important to pay attention to the proper functioning of the markets, develop technologies to monitor market performance and systems to manage system reliability. In this regard, the appearance of this book is very timely.

This book is a compilation of the recent developments particularly in response to the demands dictated by restructuring and deregulation. Because of the pervasive effects of restructuring on every facet and every level of the power system, new developments span a very wide area. This has, of-course, resulted a major shift in not only the operation and management aspects but also in the research and teaching related to power systems. Growth in the capabilities of computers, artificial intelligence techniques and information technology has had a major impact in this area.

Written by twenty well-known individuals, experts in their own areas, this book covers most aspects of the way restructuring has impacted the operation of electric supply systems. The first seven chapters cover the background to deregulation in a number of countries, competitive electricity markets, transmission open access and pricing practices, transmission expansion and distribution design under the restructured environment, and costs and benefits associated with restructuring cou-

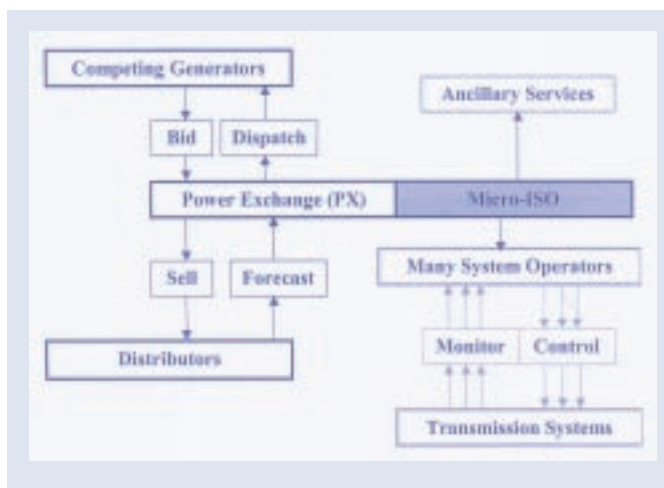
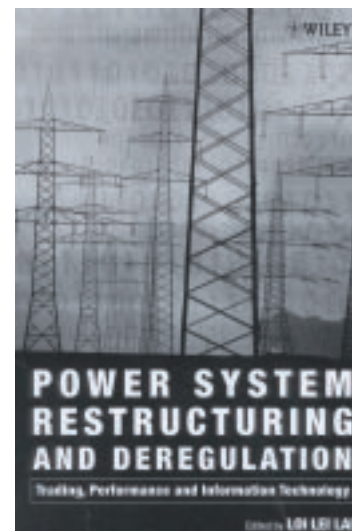
by *Om Malik,*
University of Calgary, Calgary, AB

pled with environmental impacts.

Competitive environment requires improvements in productivity through better use of resources. Improvements in productivity can be achieved by better asset management and employment of new technology. These aspects are covered in the last five chapters.

Application of new technologies such as FACTS to help achieve the desired power flows and Internet to monitor contracted power trading is described in Chapters 8 and 12, respectively. Application of wavelet transform and artificial intelligence techniques, such as neural networks and fuzzy logic, to model and analyze power plants and system disturbances is well described in Chapter 10. Internet is becoming

pervasive. General background to help monitor power system operation from remote locations is described in Chapter 12.



General application of information technology to a number of functions in a power system is demonstrated in Chapter 11. The title of this chapter may mislead a casual reader as the techniques described in this chapter, such as genetic algorithm, evolutionary programming, artificial neural networks, etc., are more commonly described as artificial intelligence rather than information technology. The contents of this chapter also do not form a homogenous set leaving the impression of a collection of miscellaneous items.

Overall, the contents of the book are well balanced between the introduction of electric power utility restructuring, its impact and the new technologies developed in response

to the transition from the vertically integrated utility to the competitive market environment. All chapters are supported by extensive set of references. Considering the number of contributors covering such a wide set of topics, some overlapping of the material between chapters and differences in viewpoints is inevitable. That simply enhances the usefulness of the book particularly at this rather early stage in this newly evolving field. This book is certainly a valuable source of material for all those involved in any aspect of electrical energy matters, be they in planning, design, operation, research or be managers and policy makers in the electric energy field.

The CR Editor acknowledges the support of Ms Aida Krneta (email: akrneta@wiley.com), J.Wiley and Sons, Publishers for her support of this Book Review.