

Power Loss The Origins Of Deregulation And Restructuring In The American Electric Utility System

Understanding Electric Utilities and De-RegulationThe Electrical Utility in a Digital Age & Revival of the Science of Electricity in the Digital AgeElectric Utility Systems and PracticesElectric Utility Resource PlanningElectric Power Requirements and Supply in the U.S., Class 1 Electric Utility SystemsUnderstanding Electric Power SystemsElectric Power StatisticsElectric Power Requirements and Supply in the U.S., Class 1 Electric Utility SystemsElectric Utility SystemElectric utility system practicesUnderstanding Electric Power SystemsSurvey of Electric Utility System Planning PracticesElectric System OperationsElectric System Operations: Evolving to the Modern Grid, Second EditionNational Power Grid StudySEC DocketSurvey of Electric Utility System Planning PracticesPower LossSynthetic Electric Utility Systems for Evaluating Advanced TechnologiesStatistical Year Book of the Electric Utility Industry for ... H. Lee Willis Simon Davies Homer M. Rustebakke Steven Sim United States. Federal Power Commission Frank Delea United States. Federal Power Commission United States. Federal Power Commission R.W. Beck and Associates Electric Utility Engineering Department Jack Casazza Edison Electric Institute. Electrical System and Equipment Committee Mani Vadari Subramanian Vadari United States. Department of Energy. Office of Utility Systems United States. Securities and Exchange Commission Edison Electric Institute. System Planning Committee Richard F. Hirsh Power Technologies, inc

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power interruptions of the scale of the north american blackout of 2003 are rare but they still loom as a possibility will the aging infrastructure fail because deregulated monopolies have no financial incentives to upgrade is centralized planning becoming subordinate to market forces understanding electric utilities and de regulation second edition provides an updated non technical description that sheds light on the nature of the industry and the issues involved in its transition away from a regulated environment the book begins by broadly surveying the industry from a regulated utility structure to the major concepts of de regulation to the history of electricity the technical aspects and the business of power then the authors delve into the technologies and functions on which the industry operates the many ways that power is used and the various means of power generation including central

generating stations renewable energy and single household size generators the authors then devote considerable attention to the details of regulation and de regulation to conclude one new chapter examines aging infrastructures and reliability of service while another explores the causes of blackouts and how they can be prevented based on the authors extensive experience understanding electric utilities and de regulation second edition offers an up to date perspective on the major issues impacting the daily operations as well as the long term future of the electric utilities industry

presently much discussion exists regarding the proliferation of harmonics in the electric utility system moreover the susceptibility of this system to damage or destruction from a well positioned nuclear e m p is a subject of great concern such problems are not necessarily intrinsic to the process of electric transmission and distribution but only present themselves when certain configurations exist within the electric utility system paramount in any transmission or distribution system is that such system must be a closed system that is the electromagnetic boundary condition must be maintained to the highest practical degree this assures that the entry or exit of extraneous electric forces is minimized presently with regard to the electric utility system the electromagnetic boundary condition is being violated in two ways 1 by the ubiquitous employment of wye to wye connected transmission and distribution transformers and related load configuration 2 through the extension of a common neutral connection throughout the entire electric utility system the widespread and enforced adoption of these practices has rendered the electric utility system an open system or in other words an antenna system one of unprecedented proportions the consequences must be obvious it is the objective of the following series of engineering reports to re establish a fundamental understanding of polyphase alternating current and then apply this understanding to the analysis of the situation as it exists today with regard to the electric utility system in this digital age the theoretical basis provided for electrical engineering has been defiled reduced to an assemblage of delusive pronouncements enforced by a cabal of academic theoreticians what gives authoritative force to their dictates is the overtly complex and convoluted mathematics which enshrouds them this mathematics in turn becomes a rite of passage in teaching and replacing reason and experiment once the idols become digitized they become law and consequently electricity has become a lost science relegated to the same scrap heap as alchemy however in historical perspective the theoretical basis for electrical engineering had achieved a very high level of development at the onset of the 20th century this to meet the demands of a rapidly developing commercial enterprise most notably that of the electro magnetic telegraph and later electric light and power electrical science progressed remarkably well in this era and thus became an exact science which engendered well thought out theories the foundations of this science were derived from the experimental researches of michael faraday and their mathematical development by clerk maxwell this became known as the faraday maxwell theory of electricity

covers the essential components operation and protection of the electric power system in a single volume discusses how the system operation and components are protected from abnormal operation such as short circuits and the generation transmission and distribution of electrical power presents information on how electric power is transmitted energy from generator to load and provides insights into the nature of the electric utility business

most people including many legislators regulators and other decision makers in the electric utility industry have misconceptions about how electric utilities really work and plan for the future this lack of understanding can lead to poorly informed decisions and policies that directly affect the choices utilities must make using easy to understand text and examples electric utility resource planning economics reliability and decision making clarifies how utilities operate their systems and prepare for the future this explanation will show readers that both expected and counterintuitive results can occur i e conservation might result in higher air emissions or lowering costs could lead to higher electric rates taking readers step

by step through this process the book in the following order creates a hypothetical utility explains how and why a utility operates its system of generating units discusses the planning methods that a utility would or should use guides readers through each stage of a planning analysis for the hypothetical utility examining various resource options conservation new power plants and solar in addition the author introduces four fundamental principles of resource planning that should guide utilities he also offers opinions on how certain trends in utility regulation and legislation can hinder utility planners efforts to identify and select the best resources for the utility s customers with this book author dr steven sim applies his experience and insights from more than two decades of resource planning for florida power and light fpl as one of the largest utilities in the united states fpl has faced a multitude of resource planning challenges and dr sim has performed and supervised thousands of analyses designed to meet these obstacles he has also served as an fpl witness in regulatory hearings on a wide variety of topics ranging from the economic implications of nuclear conservation coal gas and other resource options to the non economic impacts air emissions fuel usage system reliability etc they present

a comprehensive look in layman s terms at the many aspects of the provision of electric power by two veteran executives and respected experts technological advances and changes in government policy and regulation have altered the electric power industry in recent years and will continue to impact it for quite some time fully updated with the latest changes to regulation structure and technology this new edition of understanding electric power systems offers a real world view of the industry explaining how it operates how it is structured and how electricity is regulated and priced it includes extensive references for the reader and will be especially useful to lawyers government officials regulators engineers and students as well as the general public the book explains the physical functioning of electric power systems the electric power business in today s environment and the related institutions including recent changes in the roles of the federal energy regulatory commission and the north american reliability company significant changes that are affecting the industry are covered in this new edition including the expanded role of the federal government in the planning and operation of the nation s electric utilities new energy laws and a large number of ferc regulations implementing these laws concerns over global warming and potential impacts on the electric industry pressures for expansion of the electric grid and the implementation of smart grid technologies the growing importance of various energy storage technologies and renewable energy sources new nuclear generation technologies the 2009 economic stimulus package

the enron scandal notwithstanding it is important for professionals in the electric power industry and related positions gain a solid understanding of electric power systems and how they work written by two veteran power company managers and respected experts this is a real world view of electric power systems how they operate how the organizations are structured and how electricity is regulated and priced a comprehensive overview of the electric power industry from the inside covers electric power system components electricity consumption generation transmission distribution electric utility operation electric system control power system reliability government regulation utility rate making and financial considerations includes an extensive glossary of key terms used in the u s and also definitions for terms used worldwide

here is a timely resource that gives you an insightful business perspective on electric systems operations revealing how this area is critical to a utility s ability to provide reliable power to its customers the book presents a thorough definition system operations identifying and explaining the various systems that support this function and how they integrate into the utility you discover how a utility s network operation is a key contributor to the viable sustainment of its business the book presents the convergence of the systems used in the grid operations of today and addresses the emerging needs of the smart grid operations of tomorrow you learn how system operations help to ensure the right levels of safety

reliability and efficiency in everything that relates to transmission and distribution grid management the book discusses important technologically intensive systems like ems dms that function inside the control center additionally you are introduced to dems an emerging system which has been designed to help utilities provide better services to customers and enable customers to become an integral part of the overall utility system

this completely updated second edition includes case studies and a focus on the business of system operations the broad range of actions under system operations from transmission to distribution are explored the underpinnings of electric systems operations are highlighted with an introduction to utilities and power systems it offers a thorough definition of system operations identifying and explaining the various systems that support this function and how they integrate into the utility the book presents a thorough definition of system operations identifying and explaining the various systems that support this function and how they integrate into the utility the business perspective on electric systems operation and how critical this area is to a utility s ability to provide reliable power to customers is detailed readers discover how a utility s network operation is a key contributor to the viable sustainment of its business the book presents the convergence of the systems used in the grid operations of today and addresses the emerging needs of the smart grid operations of tomorrow readers discover how a utility s network operation is a key contributor to the viable sustainment of its business as well as learn how system operations help to ensure the right levels of safety reliability and efficiency in everything that relates to transmission and distribution grid management

a perceptive account of the deregulation of the electric power industry

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