# Aging Power Delivery Infrastructures By Willis H Lee Schrieber Randall R Crc Press2013 Hardcover 2nd Edition Hardcover

Providing more than twice the content of the original edition, this new edition is the premier source on the selection, development, and provision of safe, high-quality, and cost-effective electric utility distribution systems, and it promises vast improvements in system reliability and layout by spanning every aspect of system planning including load forecasting, scheduling, performance, and economics. Responding to the evolving needs of electric utilities, Power Distribution Planning Reference Book presents an abundance of real-world examples, procedural and managerial issues, and engineering and analytical methodologies that are crucial to efficient and enhanced system performance.

A comprehensive, coherent strategy for modernizing America's electricity infrastructure while ensuring affordable, reliable, secure, and environmentally sustainable electricity services. America's aging electricity infrastructure is deteriorating rapidly even as the need for highly reliable electric service—driven by the explosion of digital technology—continues to rise. Largely missing from national discussions, however, is a coherent, comprehensive national strategy for modernizing this critical infrastructure. Energy expert Mason Willrich presents just such a strategy in this book, connecting the dots across electric utilities, independent suppliers, government bureaucracies, political jurisdictions, and academic disciplines. He explains the need for a coherent approach, offers a framework for analyzing policy options, and proposes a step-by-step strategy for modernizing electrical infrastructure, end-to-end, in a way that ensures the delivery of affordable, reliable, secure, and environmentally sustainable electricity services. Willrich argues that an effective electrical infrastructure modernization strategy must incorporate flexibility, adaptability, and the capacity to coordinate policies at local, state, and federal levels. He reviews the history of America's electrification, from Edison's demonstration of the incandescent light bulb through the recent expansion of wind, solar, and energy efficiency as carbon-free energy resources. He describes the current ownership and operation of the electric industry and the complicated web of federal and state policies that govern it.

"Covering virtually all areas of distribution engineering, this complete reference work examines the unique behavior of utilities and provides the practical knowledge necessary to solve real-world distribution problems. "

Public Utilities Fortnightly

Data Driven Load Modeling in Power Distribution System

A Cyberattack, a Nation Unprepared, Surviving the Aftermath

Annual Report

IEEE/PES Transmission and Distribution Conference and Exposition

Six years ago, Infrastructure as Code was a new concept. Today, as even banks and other conservative organizations plan moves to the cloud, development teams for companies worldwide are attempting to build large infrastructure codebases. With this practical book, Kief Morris of ThoughtWorks shows you how to effectively use principles, practices, and patterns pioneered by DevOps teams to manage cloud-age infrastructure. Ideal for system administrators, infrastructure engineers, software developers, team leads, and architects, this updated edition demonstrates how you can exploit cloud and automation technology to make changes easily, safely, quickly, and responsibly. You'll learn how to define everything as code and apply software design and engineering practices to build your system from small, loosely coupled pieces. This book covers: Foundations: Use Infrastructure as Code to drive continuous change and raise the bar of operational quality, using tools and technologies to build cloud-based platforms Working with infrastructure stacks: Learn how to define, provision, test, and continuously deliver changes to infrastructure resources Working with servers and other platforms: Use patterns to design provisioning and configuration of servers and clusters Working with large systems and teams: Learn workflows, governance, and architectural patterns to create and manage infrastructure elements

Although much has been said and written about the need for government to adapt to the new realities that resulted from the transformed paradigms in the Information Age, the world is lacking practical, tangible solutions on how to respond to these changes.

Implementing the automation of electric distribution networks, from simple remote control to the application of software-based decision tools, requires many considerations, such as assessing costs, selecting the control infrastructure type and automation level, deciding on the ambition level, and justifying the solution through a business case. Control and Automation of Electric Power Distribution Systems addresses all of these issues to aid you in resolving automation problems and improving the management of your distribution network. Bringing together automation concepts as they apply to utility distribution systems, this volume presents the theoretical and practical details of a control and automation solution for the entire distribution system of substations and feeders. The fundamentals of this solution include depth of control, boundaries of control responsibility, stages of automation, automation intensity levels, and automated device preparedness. To meet specific performance goals, the authors discuss distribution planning, performance calculations, and protection to facilitate the selection of the primary device, associated secondary control, and fault indicators. The book also provides two case studies that illustrate the business case for distribution automation (DA) and methods for calculating benefits, including the assessment of crew time savings. As utilities strive for better economies, DA, along with other tools described in this volume, help to achieve improved management of the distribution network. Using Control and Automation of Electric Power Distribution Systems, you can embark on the automation solution best suited for your needs.

The Economics of Network Control

Aging Power Delivery Infrastructures

Bibliographic Index

Digest of the Global Information Infrastructure Commission

Pathways to Health Equity

"Ted Koppel reveals that a major cyberattack on America's power grid is not only possible but likely--and that it would be devastating" and "examines a threat unique to our time and evaluates potential ways to prepare for a catastrophe"--Book jacket.

Nanoscale memories are used everywhere. From your iPhone to a supercomputer, every electronic device contains at least one such type. With coverage of current and prototypical technologies, Nanoscale Semiconductor Memories: Technology and Applications presents the latest research in the field of nanoscale memories technology in one place. It also covers a myriad of applications that nanoscale memories technology has enabled. The book begins with coverage of SRAM, addressing the design challenges as the technology scales, then provides design strategies to mitigate radiation induced upsets in SRAM. It discusses the current state-of-the-art DRAM technology and the need to develop high performance sense amplifier circuitry. The text then covers the novel concept of capacitorless 1T DRAM, termed as Advanced-RAM or A-RAM, and presents a discussion on quantum dot (QD) based flash memory. Building on this foundation, the coverage turns to STT-RAM, emphasizing scalable embedded STT-RAM, and the physics and engineering of magnetic domain wall "racetrack" memory. The book also discusses state-of-the-art modeling applied to phase change memory devices and includes an extensive review of RRAM, highlighting the physics of operation and analyzing different materials systems currently under investigation. The hunt is still on for universal memory that fits all the requirements of an "ideal memory" capable of high-density storage, low-power operation, unparalleled speed, high endurance, and low cost. Taking an interdisciplinary approach, this book bridges technological and application issues to provide the groundwork for developing custom designed memory systems.

Good aging infrastructure management consists of optimizing the choice of equipment and its refurbishment while also making compatible changes in all those operating and ownership policies, the whole combination aimed at optimizing the business results the power system owner desires. Both a reference and tutorial guide, this second edition of Aging Power Delivery Infrastructures provides updated coverage of aging power delivery systems, the problems they cause, and the technical and managerial approaches that power systems owners can take to manage them. See What’s New in the Second Edition: All chapters have been updated or are completely new Comprehensive discussions of all issues related to equipment aging Business impact analysis and models and engineering business studies of actual utility cases Strategy and policy issues and how to frame and customize them for specific situations This book looks at the basics of equipment aging and its system and business impacts on utilities. It covers various maintenance, service and retrofit methods available to mitigate age-related deterioration of equipment. It also presents numerous configuration and automation upgrades at the system level that can deal with higher portions of aging equipment in the system and still provide good service at a reasonable cost.

Modernizing America's Electricity Infrastructure

Power Distribution Engineering

Power Distribution Planning Reference Book, Second Edition

Guide to Electric Power Generation, Second Edition

Communities in Action

**An introduction to the field of applied ontology with examples derived particularly from biomedicine, covering theoretical components, design practices, and practical applications. In the era of “big data,” science is increasingly information driven, and the potential for computers to store, manage, and integrate massive amounts of data has given rise to such new disciplinary fields as biomedical informatics. Applied ontology offers a strategy for the organization of scientific information in computer-tractable form, drawing on concepts not only from computer and information science but also from linguistics, logic, and philosophy. This book provides an introduction to the field of applied ontology that is of particular relevance to biomedicine, covering theoretical components of ontologies, best practices for ontology design, and examples of biomedical ontologies in use. After defining an ontology as a representation of the types of entities in a given domain, the book distinguishes between different kinds of ontologies and taxonomies, and shows how applied ontology draws on more traditional ideas from metaphysics. It presents the core features of the Basic Formal Ontology (BFO), now used by over one hundred ontology projects around the world, and offers examples of domain ontologies that utilize BFO. The book also describes Web Ontology Language (OWL), a common framework for Semantic Web technologies. Throughout, the book provides concrete recommendations for the design and construction of domain ontologies.**

**Policy makers often call for increased spending on infrastructure, which can encompass a broad range of investments, from roads and bridges to digital networks that will expand access to high-speed broadband. Some point to the near-term macroeconomic benefits, such as job creation, associated with infrastructure spending; others point to the long-term effects of such spending on productivity and economic growth. Economic Analysis and Infrastructure Investment explores the links between infrastructure investment and economic outcomes, analyzing key economic issues in the funding and management of infrastructure projects. It includes new research on the short-run stimulus effects of infrastructure spending, develops new estimates of the stock of US infrastructure capital, and explores incentive aspects of public-private partnerships with particular attention to their allocation of risk. The volume provides a reference for researchers seeking to study infrastructure issues and for policymakers tasked with determining the appropriate level and allocation of infrastructure spending.**

**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.**

**Understanding Electric Utilities and De-Regulation**

**The Future of the Public's Health in the 21st Century**

**Investigation of the Applicability of Power Line Communications for Smart Single Wire Earth Return**

**Control and Automation of Electrical Power Distribution Systems**

**Book Review Index**

The electric power delivery system that carries electricity from large central generators to customers could be severely damaged by a small number of well-informed attackers. The system is inherently vulnerable because transmission lines may span hundreds of miles, and many key facilities are unguarded. This vulnerability is exacerbated by the fact that the power grid, most of which was originally designed to meet the needs of individual vertically integrated utilities, is being used to move power between regions to support the needs of competitive markets for power generation. Primarily because of ambiguities introduced as a result of recent restricting the of the industry and cost pressures from consumers and regulators, investment to strengthen and upgrade the grid has lagged, with the result that many parts of the bulk high-voltage system are heavily stressed. Electric systems are not designed to withstand or quickly recover from damage inflicted simultaneously on multiple components. Such an attack could be carried out by knowledgeable attackers with little risk of detection or interdiction. Further well-planned and coordinated attacks by terrorists could leave the electric power system in a large region of the country at least partially disabled for a very long time. Although there are many examples of terrorist and military attacks on power systems elsewhere in the world, at the time of this study international terrorists have shown limited interest in attacking the U.S. power grid. However, that should not be a basis for complacency. Because all parts of the economy, as well as human health and welfare, depend on electricity, the results could be devastating. Terrorism and the Electric Power Delivery System focuses on measures that could make the power delivery system less vulnerable to attacks, restore power faster after an attack, and make critical services less vulnerable while the delivery of conventional electric power has been disrupted.

"Illustrates state-of-the-art planning, design, operational, and managerial methods. Demonstrates novel approaches to utilizing resources in an aging electric power delivery infrastructure-maximizing system effectiveness and maintaining competitive financial performance while reinforcing good customer service."

"As demand for power increases in rural areas serviced by Single Wire Earth Return (SWER) networks, distribution issues are becoming increasingly evident. Voltage regulation and system capacity concerns are driving utilities toward using smarter compensation devices for network control in an attempt to provide longevity for aging SWER infrastructure. To date, despite increasing complexity in power delivery over SWER, no effective network monitoring solutions have been proposed.This paper examines the case for network monitoring and centralised management of smart compensation devices via PowerLine Communications (PLC). After establishing advantages in network monitoring, regulation and maintenance for SWER networks, narrowband and broadband PLC issues are reviewed. The channel capacity of typical SWER conductors is then evaluated and compared to data throughput requirements derived from existing infrastructure to validate the applicability of developing PLC over SWER infrastructureIn building a more efficient, smarter network, a degree of device autonomy will be eroded to facilitate a more holistically managed system. This can only be accomplished through communication between smart devices themselves and reporting to utilities, which in turn will require a communications medium. This thesis looks at the possibility of using the power distribution system as the communication medium."--Abstract.

Aging Power Delivery Infrastructures, Second Edition

Building Ontologies with Basic Formal Ontology

Enhancing the Resilience of the Nation's Electricity System

Infrastructure as Code

Terrorism and the Electric Power Delivery System

***The Upside of Aging: How Long Life Is Changing the World of Health, Work, Innovation, Policy and Purpose explores a titanic shift that will alter every aspect of human existence, from the jobs we hold to the products we buy to the medical care we receive – an aging revolution underway across America and the world. Moving beyond the stereotypes of dependency and decline that have defined older age, The Upside of Aging reveals the vast opportunity and potential of this aging phenomenon, despite significant policy and societal challenges that must be addressed. The book’s chapter authors, all prominent thought-leaders, point to a reinvention and reimagination of our older years that have critical implications for people of all ages. With a positive call to action, the book illuminates the upside for health and wellness, work and volunteerism, economic growth, innovation and education. The authors, like the baby boom generation itself, posit new ways of thinking about aging, as longevity and declining birthrates put the world on track for a mature population of unprecedented size and significance. Among topics they examine are: The emotional intelligence and qualities of the aging brain that science is uncovering, “senior moments” notwithstanding. The new worlds of genomics, medicine and technology that are revolutionizing health care and wellness. The aging population’s massive impact on global markets, with enormous profit potential from an explosion in products and services geared toward mature consumers. New education paradigms to meet the needs and aspirations of older people, and to capitalize on their talents. The benefits that aging workers and entrepreneurs bring to companies, and the crucial role of older people in philanthropy and society. Tools and policies to facilitate financial security for longer and more purposeful lives. Infrastructure and housing changes to create livable cities for all ages, enabling “aging in place” and continuing civic contribution from millions of older adults. The opportunities and potential for intergenerational engagement and collaboration. The Upside of Aging defines a future that differs profoundly from the retirement dreams of our parents and grandparents, one that holds promise and power and bears the stamp of a generation that has changed every stage of life through which it has moved.***

***Details the full spectrum of the equipment and processes used in the production of electricity, from the basics of energy conversion, to prime movers, generators, and boilers. The Second Edition expands coverage of the gasification of coal, gas turbines, and the effective use of generation in place of efficiency measures.***

***Americans' safety, productivity, comfort, and convenience depend on the reliable supply of electric power. The electric power system is a complex "cyber-physical" system composed of a network of millions of components spread out across the continent. These components are owned, operated, and regulated by thousands of different entities. Power system operators work hard to assure safe and reliable service, but large outages occasionally happen. Given the nature of the system, there is simply no way that outages can be completely avoided, no matter how much time and money is devoted to such an effort. The system's reliability and resilience can be improved but never made perfect. Thus, system owners, operators, and regulators must prioritize their investments based on potential benefits. Enhancing the Resilience of the Nation's Electricity System focuses on identifying, developing, and implementing strategies to increase the power system's resilience in the face of events that can cause large-area, long-duration outages: blackouts that extend over multiple service areas and last several days or longer. Resilience is not just about lessening the likelihood that these outages will occur. It is also about limiting the scope and impact of outages when they do occur, restoring power rapidly afterwards, and learning from these experiences to better deal with events in the future.***

***McGraw-Hill Yearbook of Science and Technology***

***Hearings Before a Subcommittee of the Committee on Appropriations, House of Representatives, One Hundred Tenth Congress, Second Session***

***Public Interest Energy Research Program***

***Electric Power Distribution Reliability, Second Edition***

***Fundamentals and Applications***

*In the United States, some populations suffer from far greater disparities in health than others. Those disparities are caused not only by fundamental differences in health status across segments of the population, but also because of inequities in factors that impact health status, so-called determinants of health. Only part of an individual's health status depends on his or her behavior and choice; community-wide problems like poverty, unemployment, poor education, inadequate housing, poor public transportation, interpersonal violence, and decaying neighborhoods also contribute to health inequities, as well as the historic and ongoing interplay of structures, policies, and norms that shape lives. When these factors are not optimal in a community, it does not mean they are intractable: such inequities can be mitigated by social*

*policies that can shape health in powerful ways. Communities in Action: Pathways to Health Equity seeks to delineate the causes of and the solutions to health inequities in the United States. This report focuses on what communities can do to promote health equity, what actions are needed by the many and varied stakeholders that are part of communities or support them, as well as the root causes and structural barriers that need to be overcome.*

*Vols. 8-10 of the 1965-1984 master cumulation constitute a title index.*

*Due to its high impact on the cost of electricity and its direct correlation with customer satisfaction, distribution reliability continues to be one of the most important topics in the electric power industry. Continuing in the unique tradition of the bestselling first edition, Electric Power Distribution Reliability, Second Edition consolidates all pertinent topics on electric power distribution into one comprehensive volume balancing theory, practical knowledge, and real world applications. Updated and expanded with new information on benchmarking, system hardening, underground conversion, and aging infrastructure, this timely reference enables you to— · Manage aging infrastructure · Harden electric power distribution systems · Avoid common benchmarking pitfalls · Apply effective risk management The electric power industry will continue to make distribution system reliability and customer-level reliability a top priority. Presenting a wealth of useful knowledge, Electric Power Distribution Reliability, Second Edition remains the only book that is completely dedicated to this important topic.*

*Technology and Applications*

*Economic Analysis and Infrastructure Investment*

*Lights Out*

*The Upside of Aging*

*Departments of Transportation, and Housing and Urban Development, and Related Agencies Appropriations for 2009*

**A complete guide to smart grid networking and communications for energy engineers With contributions from more than 30 experts, Smart Grid Infrastructure & Networking describes cutting-edge technologies for connecting the electrical power infrastructure to modern, computerized communications networks. The book offers essential information on standardization, applications, protocols, automation, architecture, and management. Key topics such as bidirectional communication, automation, renewable energy integration, wireless sensor networks, and more are discussed in this practical, comprehensive resource. COVERAGE INCLUDES: * Demand-side energy management * The modernization of distribution automation featuring intelligent FDIR and volt-var optimization Advanced asset management * Wide-area early warning systems * The integration of renewable energy sources into smart grids * The microgrid in the electric system transformation * Enhancing the integration of renewables in radial distribution networks through smart links * Voltage-based control of DG units and active loads in smart microgrids * Electric vehicles in a smart grid environment * Low-voltage, DC grid–powered LED lighting system with smart ambient sensor control for energy conservation in green building * Multiple distributed smart microgrids with a self-autonomous, energy harvesting wireless sensor network * Wireless sensor networks for consumer applications in the smart grid * ZigBee-based wireless monitoring and control system for smart grids**

**McGraw-Hill's world-renowned annual publication continues its tradition of making information on the latest advances in science and technology accessible to the non-scientist through concise, well-illustrated articles.**

**A complete guide to smart grid networking and communications for energy engineersWith contributions from more than 30 experts,Smart Grid Infrastructure powered LED lighting system with smart ambient sensor control for energy conservation in green building * Multiple distributed smart microgrids with a self-autonomous,energy harvesting wireless sensor network * Wireless sensor networks for consumer applications in the smart grid * ZigBee-based wireless monitoring and control system for smart grids**

**Configuring the Telecommunications Infrastructure for the Computer Age**

**2007-2011 Electricity Research Investment Plan : Commission Report**

**American Book Publishing Record**

**Chain Store Age**

**I-ways**

***The anthrax incidents following the 9/11 terrorist attacks put the spotlight on the nation's public health agencies, placing it under an unprecedented scrutiny that added new dimensions to the complex issues considered in this report. The Future of the Public's Health in the 21st Century reaffirms the vision of Healthy People 2010, and outlines a systems approach to assuring the nation's health in practice, research, and policy. This approach focuses on joining the unique resources and perspectives of diverse sectors and entities and challenges these groups to work in a concerted, strategic way to promote and protect the public's health. Focusing on diverse partnerships as the framework for public health, the book discusses: The need for a shift from an individual to a population-based approach in practice, research, policy, and community engagement. The status of the governmental public health infrastructure and what needs to be improved, including its interface with the health care delivery system. The roles nongovernment actors, such as academia, business, local communities and the media can play in creating a healthy nation. Providing an accessible analysis, this book will be important to public health policy-makers and practitioners, business and community leaders, health advocates, educators and journalists.***

***How Long Life Is Changing the World of Health, Work, Innovation, Policy, and Purpose***

***Nanoscale Semiconductor Memories***

***Public Management in the Information Age***

***Smart Grid Infrastructure & Networking***

***The Virginia Engineer***