

# Best Readings in Green Communications

Best Readings is a collection of Journal/Magazine Special Issues, books, articles, and papers on a featured topic. This Best Readings is on Green Communications. The contributors are: Jinsong Wu (Bell Laboratories, China), Vijay K. Bhargava (University of British Columbia, Canada), John S. Thompson (University of Edinburgh, UK), Honggang Zhang (Université Européenne de Bretagne (UEB) & Supelec/IETR, France), Ekram Hossain (University of Manitoba, Winnipeg, Canada), Daniel C. Kilper (Columbia University, USA), Rodney S. Tucker (University of Melbourne, Australia)

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## ◆ Special Issues

**IEEE Journal of Selected Topics in "[Quantum Electronics, Special Issue on Green Photonics](#)", vol.17, no.2, 2011**

This special issue covers the major issues related to energy for optical systems and networks spanning from optical interconnects to wide area networks with contributions from leading experts.

**IEEE Journal on Selected Areas in Communications (JSAC), Special Issue on "[Energy-Efficient Wireless Communications](#)", vol. 29, no. 8, September 2011.**

This special issue is the first one of IEEE Journal on Selected Areas in Communications (JSAC)

focusing on energy-efficient wireless communications, which spans a broad spectrum of various timely topics relevant to the energy-efficiency issues and challenges, bringing together the state-of-the-art research results and industrial applications within the energy-efficient wireless communications.

**IEEE Wireless Communications, Feature Topics Issue on "[Green Radio Communication Networks](#)", vol. 18, no. 5, October 2011.**

This special issue provides a detailed overview of the state of the art in energy efficient wireless networks. The special issue contains some articles that address techniques that can improve the energy efficiency of individual base stations, such as base station sleep modes and distributed antenna technologies. It also contains articles that address network management perspectives to reduce energy consumption and to exploit renewable energy resources. There are also two review articles provided by the UK funded Green Radio project and the European funded EARTH project.

**IEEE Network Magazine, Special Issue on "[Energy Efficient Networks](#)", vol. 25, no. 2, 2011.**

An early and broad scope special issue covering the essential energy issues in wireline and wireless core and access networks.

**Computer Networks, Special Issue on "[Green Communication Networks](#)", v. 56, 10, 2317-2550, July 2012**

A comprehensive snapshot of the state of the art in this rapidly evolving and expanding field including both wireless and wireline networks.

**IEEE Communications Magazine, Feature Topics Issue on Green Communications, "[Energy Efficiency in Communications](#)", vol. 48, no. 11, November 2010**

This is the very first one of the three reoccurring Feature Topic issues of IEEE Communications Magazine in sequence (November 2010, June and August 2011) devoted to energy efficiency improvement, which aims to provide a holistic overview of the state-of-the-art in the relevant fundamental technology challenges, essential frameworks, international research programs, global regulation, industrial standardization, and smart grids applications for energy-efficient green communications in the coming environment-friendly & sustainable development era.

**IEEE Communications Magazine, Feature Topics Issue on Green Communications, "[Energy Efficiency in Communications: Part II](#)", vol. 49, no.6, June 2011**

This is the second part of the three reoccurring Feature Topic issues of IEEE Communications Magazine on energy efficiency for green communications, which in particular is dedicated to the latest advances in various energy-efficient fixed and wireless communications and networking technologies for highlighting the increasingly global interests in the technical potentials and approaches to mitigating energy consumption and the consequential environmental influences.

**IEEE Communications Magazine, Feature Topics Issue on Green Communications, "[Energy Efficiency in Communications: Part III](#)", vol. 49, no. 8, August 2011**

This Feature Topic issue is the finale of the "Energy Efficiency in Communications" series within IEEE Communications Magazine (November 2010, June and August 2011), which specifically covers the recent advancements and developments from networking architectures,

communications protocols and algorithms to various typical practical applications (e.g., testbed, deployment and standards, etc.) in energy-efficient communications, reflecting the cutting-edge research trends as well as the newest practical needs.

**Bell Labs Technical Journal, Special Issue on "[Green Information and Communications Technology \(ICT\) for Eco-Sustainability](#)", vol. 15, no. 2, September 2010**

This issue of Bell Labs Technical Journal provides a broad ranging review of recent research related to all aspects of energy efficiency and communications systems. Articles cover a diverse range of topics from energy efficient wireless communications, improvements in wired and optical communications technologies, energy scavenging concepts through to smart grid systems.

**Eurasip Journal on Wireless Communications and Networking, Special Issue on "[Green Radio](#)", January 2013** Having been listed as "Highly Accessed" by the EURASIP Journal on Wireless Communications and Networking, this special issue focuses on the green radio networks aiming at reducing the ever-growing energy requirements for wireless communications and radio access networks (RAN). In concrete, this special issue includes 17 papers dealing with various key topics that covers network considerations (both indoor and outdoor scenarios), cell layout adaptation, efficient techniques for radio resource management and optimal transmission, cognitive radio networks with environment learning & information exchange, and electronic components optimization.

## ◆ Overview Books

**David JC MacKay, "[Sustainable Energy - Without the Hot Air](#)", UIT Cambridge Ltd., 1 edition, February 20, 2009**

This book provides a tutorial level introduction to issues around energy provision, from the point of view of a physics professor. It is scientifically rigorous and dispassionate analysis of future energy issues, looking in particular at the challenges facing energy provision in the United Kingdom.

**E. Hossain, V.K. Bhargava, and G. P. Fettweis (Eds.), "[Green Radio Communication Networks](#)", Cambridge University Press, August 27, 2012 (440 book pages)**

The very first book in this field of green communications presents the state-of-the-art research on green wireless communications. It gathers all the key concepts and techniques used in energy-efficient wireless communications in one reference book. The book contains 17 chapters that cover 5 different aspects of green radio communications and networking issues. The aspects discussed in this book include communication architectures and models, physical communications techniques, base station power-management techniques, wireless access techniques for green radio networks, and green radio test-bed, experimental results and

standardization activities.

**J. Wu, S. Rangan, H. Zhang (Eds.), "[Green Communications: Theoretical Fundamentals, Algorithms and Applications](#)," CRC Press, September 20, 2012 (840 book pages)**

Comment1: This is the second published book in the field of the green communications technologies. This book is the first published effort on green communications covering broad topics of green wireless communications, green wireline communications, general relevant green topics and applications in one book using a research perspective. This book provides comprehensive coverage in an all-inclusive panoramic style on the broad areas of all relevant green communications and computing topics including general issues, theoretic concepts and algorithms, wireless communications, wireline communications, optical networking infrastructures, virtualization techniques, device- and system-level implementation details, standardizations, smart grids, data centers, cloud computing and cloud-RAN, video communications and quality of services, content distribution networks and applications. This book provides the state of art research surveys, and discusses the relevant research challenges and directions. This book is suitable for encouraging graduate students and academic and industrial researchers, engineers as well as regulatory practitioners and governmental policy makers to take up this emerging research field.

Comment 2: From FPGAs, smart grids, cognitive radio to cloud computing with focus on both wireless and wireline communications, this edited book provides a broad understanding of energy consumption, energy efficiency and energy-saving strategies for a wide range of communication systems.

## ◆ Topics

- [Theory, modeling, analysis, and/or optimization for green and sustainable communications](#)
- [Life-cycle analysis for green communications](#)
- [Architecture, strategies, algorithms, protocols, scheduling, and/or designs for green communications](#)
- [Green software, hardware, devices, and equipment for communications](#)
- [Green wireless and/or wireline communications](#)
- [Green schedulings and allocations for communications](#)
- [Green optical devices, signal processing, and communications](#)
- [Electromagnetic pollution mitigation](#)
- [Green terminals for wireless and wireline communications](#)
- [Green data storage, data centers and cloud computing, contention distribution networks](#)
- [Green communications under delay or quality of service constraints](#)
- [Physical layer approaches for green communications and computing](#)
- [Green cognitive communications and computing](#)
- [Green smart grids](#)
- [Green Internet of Things](#)
- [Energy harvesting, storage, and recycling](#)

- [Standardization, evaluation, practice, measurement, policy and regulation for green communications](#)
  - [Applications, economics, social issues, and interdisciplinary topics](#)
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