Best Practices & Life Extension Guidelines for Substations: The “Teal Book”

EPRI’s industry-standard reference delivers the latest knowledge and tools to help utilities reduce substation life-cycle costs, improve the reliability of critical equipment, and optimize maintenance.

Containing a wealth of information available in no other single resource, EPRI’s Best Practices and Life Extension Guidelines for Substations (1001779) offers utilities a compendium of fundamental principles and the latest information and techniques for operating and maintaining substation equipment.

This regularly updated reference is part of the landmark series of EPRI power delivery references. These comprehensive guidebooks—each printed with a distinctive colored cover—document and distill the knowledge and experience of the world’s leading power delivery experts. In this tradition, the next edition of Best Practices and Life Extension Guidelines for Substations will be printed with a blue-green cover and be referred to as the “Teal Book.”

Know-How to Meet Today’s Challenges
Substation owners dealing with today’s competitive and economic realities require new strategies for meeting their cost, performance, and reliability goals. The need is particularly acute for companies that have lost seasoned personnel and are operating with less-experienced staff.

The guidelines represent EPRI’s response to members’ needs to preserve institutional expertise as well as present new technologies and practices. The guidelines are specifically designed to help utilities proactively re-evaluate current practices in the context of plant-specific situations.

The guidelines are a living knowledge asset that is regularly updated to keep utilities abreast of advances in technology and substation maintenance practices.

Audience, Application, and Value
The Teal Book is intended for use by any utility personnel involved in substation equipment maintenance, repair, or replacement. The book will be a reference manual for practicing engineers and a training tool for new engineers or those transitioning to substations. Other intended users include consultants, planners, and university engineering students preparing for careers in the power industry.

Engineers with even modest or minimal preparation or background in substations will benefit from the tutorial nature of the book, while experienced professionals will find the technical depth they need to carry out their assignments.

The guidelines have the following purposes:

- Establish a maintenance methodology that provides a systematic approach to maintaining substation equipment
- Provide strategies to assess the condition of equipment
- Provide a decision-making approach to the evaluation of equipment for replacement or refurbishment
- Provide a centralized knowledge repository that serves as a training tool for new personnel to accelerate their understanding of substation equipment maintenance
- Offer a user-friendly and regularly updated reference support tool to assist utility asset and maintenance personnel in working more cost-effectively and efficiently
Material and Organization
The book delivers the latest information on substation equipment maintenance practices, condition assessment techniques, and decision-making methods for equipment replacement and refurbishment. The guidelines incorporate the experience of utility, consulting, and equipment engineers to provide a cross-section of utility practices for extending the life of substation equipment.

Equipment covered includes power transformers, circuit breakers, relay and control systems, bus and structures, dc systems, grounding systems, surge arrestors, control cables, bushings, instrument transformers, and optical sensors.

Training and Services
The Teal Book is also a valuable learning tool and will supplement future EPRI substation maintenance seminars and workshops. These courses will be delivered at EPRI regional centers and on-site at utility facilities where course content can be tailored to the utility’s specific needs. Check the EPRI calendar for training course dates.

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Recent Update Reports
Transformers (1013920, November 2007)
Relays and Circuit Breakers (2008)

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