Western States Power Crisis
EPRI White Paper
- An Overview -

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Origins of the White Paper

• The roots of the document go back to several discussions of a much broader topic
  Vulnerability of the North American Power System

• EPRI annual Summer Seminars
  – EPRI Board of Directors
  – Research Advisory Council
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• Two years ago Summer Seminar participants recommended initiation of EPRI T&D Reliability Initiative
  – 40+ utilities, over $6M effort

• OBJECTIVE
  Phase I of the EPRI Reliability Initiative was launched in the fall of 1999 to determine the root causes of recent electric reliability problems

• GOALS
  To improve reliability/risk assessments of the transmission grids
  To develop near-term tools to improve system reliability

• Phase I completed in April 2001
• Phase II launched in April 2001
  – Next Meeting – Chicago, July 24 (Westin O’Hare Hotel, Rosemont, IL)
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• A year ago, Summer Seminar participants recommended that EPRI convene a national forum of private and public stakeholders focused on creating the infrastructure of digital society (CEIDS – Consortium for Electric Infrastructure to Support a Digital Society)

• OBJECTIVE
Address immediate issues posed by California crisis
Simultaneously creating the technology base needed to build a robust power delivery infrastructure for the 21st Century.
Origins of the White Paper

• EPRI is addressing the electric infrastructure needs by
  – Implementing a series of actions designed to mitigate the near-term problems in California and the West
  – Informing the policy makers on the science and technology opportunities and issues facing digital society
  – Developing and demonstrating the new infrastructure technologies, and supporting standards, needed to assure reliable electricity supply and enable digital society.
Western Power Solutions Workshop

- Western Power Solutions Workshop convened by EPRI on June 7-8, 2001
- Co-conveners:
  - Carl Guardino, President SVMG
  - Roger Hamilton, Commissioner, Oregon PUC
  - Steve Hickok, COO BPA, Member of EPRI BOD
- Discussion Leaders included:
  - Michehl Gent, President and CEO, NERC
  - Terry Winter, President and CEO, CAISO
  - T.J. Glauthier, President, Electricity Innovation Institute
The central thesis of this White Paper is that present power crisis – most evident in the Western states but potentially a national problem – requires fundamental reassessment of the critical interactive role of technology and policy in both infrastructure and markets.

This framework and related technology needs are summarized in the areas of

- Distribution Systems and Emergency Planning
- Electricity Markets
- Transmission Systems and Grid Operations
- Power Supply and Environment
Primary Near Term Issues

- Implement demand-side strategies to reduce load in the short term, and to begin the process of establishing greater demand-response to price signals.

- Facilitate faster integration of distributed resources (DR). This includes setting technical standards, defining when and where backup emergency generation can be used to support the grid, and developing better systems architecture for tying DR into the existing grid and establishing two-way flow of power.
Primary Near Term Issues (cont’d.)

- Optimize maintenance practices to reduce forced outages of power plants, transmission lines, and distribution systems, and to schedule equipment maintenance in conjunction with ISO requirements.

The use of reliability-centered maintenance (RCM) techniques, and documenting “best industry practices” should allow reduction targets of 20-40% in both generation and delivery-related outages.
Primary Near Term Issues (cont’d.)

- Provide better outage coordination among system operators, generating units, public safety institutions, business and media.

Greater exchange of information, and experience among various system operators would be a critical link of coordination.

More rigorous training of operators in “black start” conditions would be helpful in restoring service following a major outage.
Primary Near Term Issues (cont’d.)

• **Ensure investment recovery** of new technology needed to create a functioning competitive marketplace for electricity.

  This includes technology to ensure demand-response capability on the retail side, and a portfolio of pricing options for customers. Investment recovery should be extended to R&D as well.

• **Get more out of existing assets**, including generation, transmission, distribution and end-use technology. For example, up to 5,000 MW of capacity could be added in California in the next two years by upgrading the existing generating fleet and connecting DR to the grid.
Primary Longer-Term Issues

- **Improve transmission and generation planning on a regional basis.** A regional entity with the authority to site transmission lines, allocate costs, and ensure cost recovery, would be able to create a regional transmission “backbone” that would guide developers of new generation.

  Regional planning along these lines could assist greatly with congestion management in the Western region.
Resolve environmental uncertainties. Environment remains one of the major driving forces in energy development.

Resolution of scientific and regulatory uncertainties would assist greatly in long-term investment decisions.

The value of good scientific information is many times greater than the cost of acquiring this information.
Primary Longer-Term Issues (cont’d.)

- Promote an investment climate that encourages technology innovation. The uncertainties surrounding restructuring, and continued use of regulated cost-plus investment returns have hobbled the flow of advanced technology into the electricity infrastructure.

Regulatory reform should have as one of its principal objectives the stimulation and adoption of technical innovation.
Primary Longer-Term Issues (cont’d.)

• **Ensure resource diversity** by creating a diverse portfolio of electricity supply options.

Diversity has the advantage of flexibility and resiliency in meeting an uncertain future, cost containment through competition, and greater ability to weather supply interruptions.

The U.S. has inadvertently committed its future to gas-fired generation over the next few decades, possibly setting the stage for next energy crisis.
Primary Longer-Term Issues (cont’d.)

- Redesign the structure of the marketplace to coordinate wholesale and retail markets, allow price signals to flow freely, and manage the interdependencies of gas and electricity markets.
Next Steps

• Engaging the electricity stakeholder community in a sustained initiative to resolve the power crisis in the West, and prevent similar occurrences in other parts of the country.

• Presenting the recommendations of this White Paper to state, regional and national regulatory institutions for their consideration, and making the results available to the general public.

• Seeking joint action and collaborative funding for critical assessments, plus the infrastructure technology development and deployment initiatives identified in the White Paper.
EPRI White Paper is on the Web

- The White Paper can be downloaded from EPRI Web site

http://www.epri.com/