



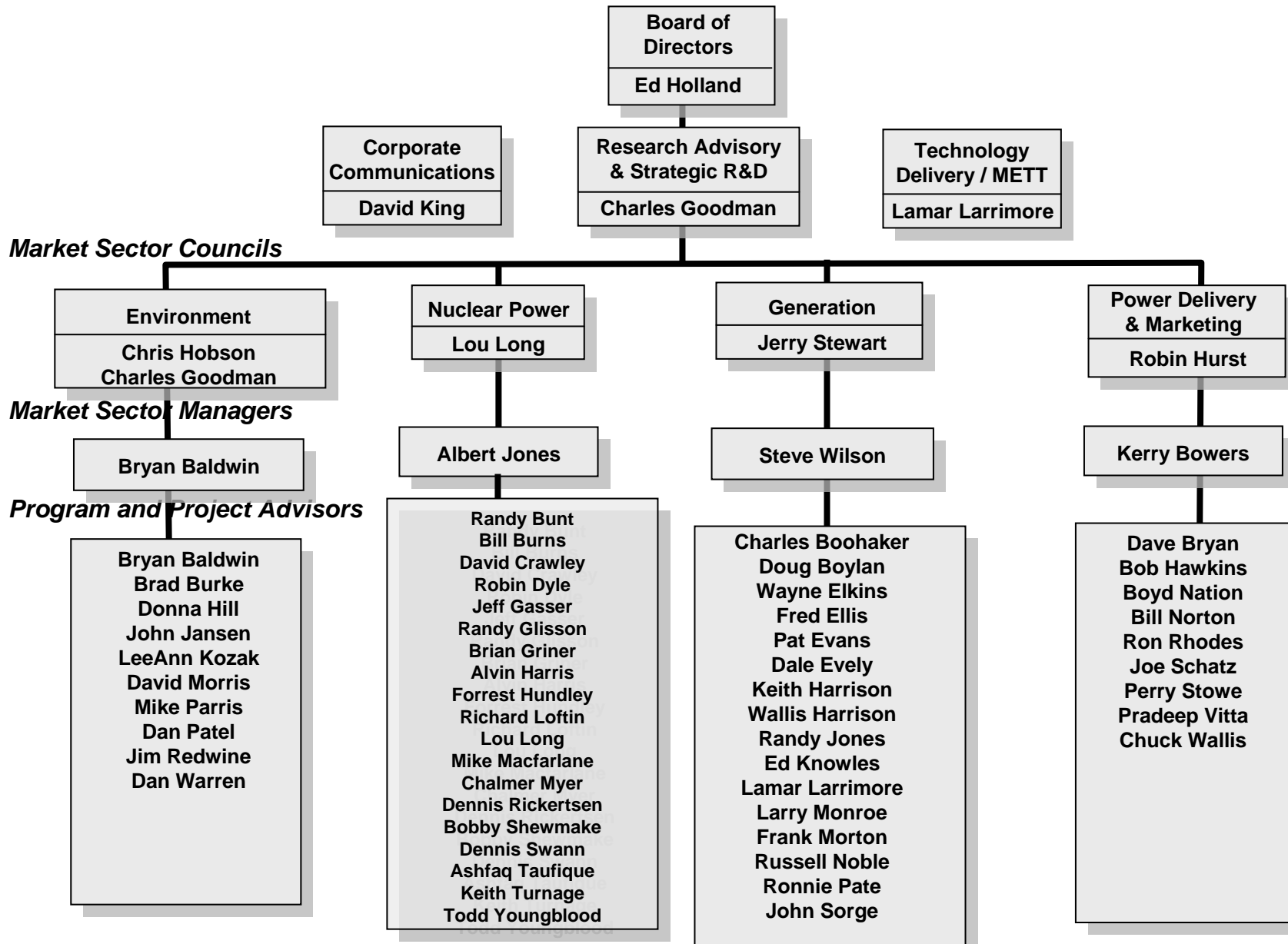
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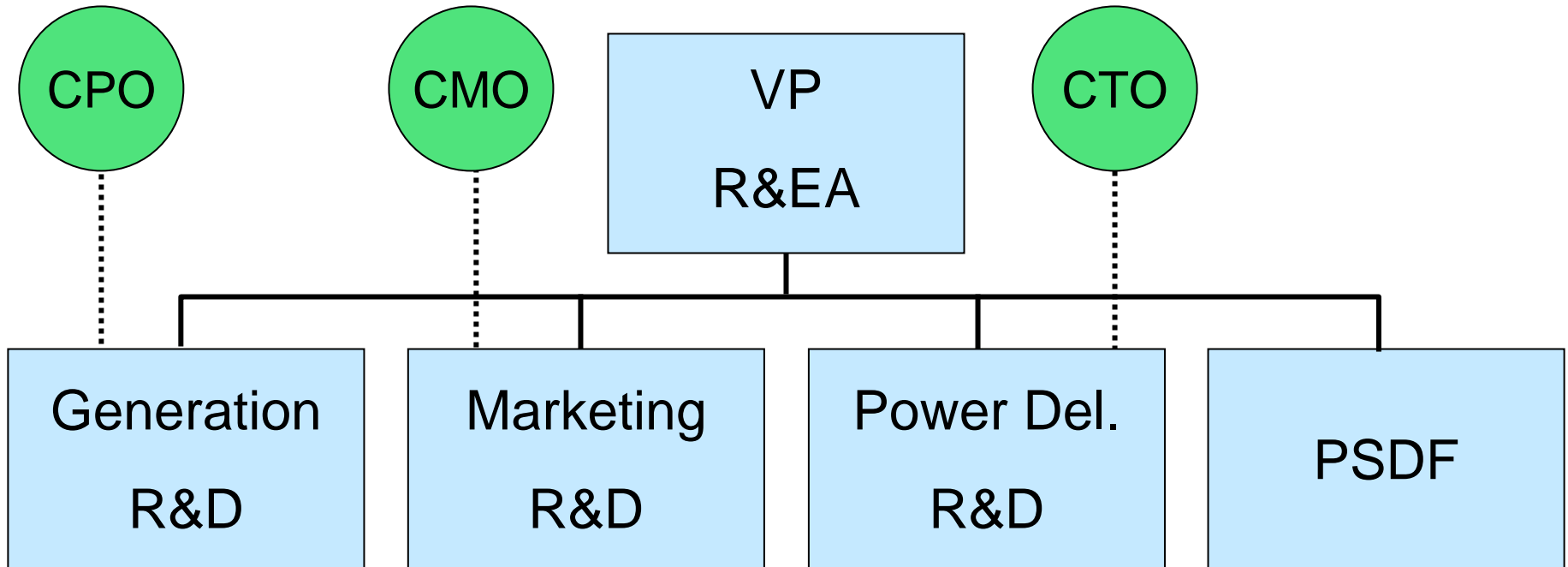
Evaluation of EPRI's Annual Portfolio

Lamar Larrimore
Southern Company

Southern Company Advisory Positions in EPRI



Southern Company R&D Organization



Key Features in R&D Structure

- Dedicated budgets for research
- R&D business plan
- Dedicated staff

Credibility

- Working relationship (and dotted-line reporting) from R&D managers to counterpart company executives
- Identify and implement highest priority projects that address executive concerns
- “Bottom-up” approach with consensus
- Development of highly qualified staff who actually work on these projects



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EPRI 2007 Membership Decision Meeting

Steve Wilson

Director, Research & Technology Management

Meeting Objectives

- Understand EPRI programs and 2007 offering
- Begin 2007 evaluation
- Provide feedback to EPRI
- Challenge our advisors

AGENDA
EPRI 2007 MEMBERSHIP DECISION MEETING

Thursday, July 6, 2006
Alabama Power Corporate Headquarters

GENERAL SESSION (Training Room 4D)

9:00	Introduction	Steve Wilson Southern Company
9:10	Opening Remarks	Paul Bowers Southern Company
9:30	EPRI Overview and Update	Hank Courtright EPRI SVP, Member Ser./Environment
9:50	EPRI Technology R&D and Applications	Hank Courtright
10:10	Review of EPRI Accomplishments 30-Year Historical Timeline Big Winners in 2005	Chris Larsen EPRI VP, Generation
10:40	EDF Experience – Value from EPRI International Members	Revis James EPRI Dir., Energy Tech. Assessment Ctr.
11:00	EPRI.com Improvements	Julie Sears EPRI Web Manager
11:30	Southern Company Decision Process	Lamar Larrimore Southern Company

11:45 **LUNCH**

1:00 – 3:00 **BUSINESS SECTOR MEETINGS**

Environment (Conference Room 12S)

SoCo Team Leader – Bryan Baldwin
EPRI Team Leader – Kent Zammit / Hank Courtright

Generation (Training Room 4D)

SoCo Team Leader – Lamar Larrimore / Steve Wilson
EPRI Team Leader – Bill Weber / Chris Larsen

Nuclear (Conference Room 14H)

SoCo Team Leader – Albert Jones
EPRI Team Leader – Ken Barry

Power Delivery (Training Room 4A)

SoCo Team Leader – Joe Schatz / Steve Wilson
EPRI Team Leader – Rick Shumard / Arshad Mansoor

Retail Marketing (Training Room 4F)

SoCo Team Leader – Pradeep Vitta / Steve Wilson
EPRI Team Leader – Rick Shumard / Marek Samotyj

SoCo Advisors to EPRI

Board of Directors
Ed Holland / Paul Bowers

Corporate Communications
David King

Research Advisory & Strategic R&D
Charles Goodman/
Chris Hobson

Technology Mgt / METT
Lamar Larrimore

Contracting
Sue Ellen Summers

Market Sector Councils

Environment
Chris Hobson

Nuclear Power
Lou Long

Generation
Jerry Stewart

Power Delivery & Marketing
Robin Hurst

Market Sector Managers

Bryan Baldwin

Albert Jones

Steve Wilson

Steve Wilson

Program and Project Advisors

Bryan Baldwin
Brad Burke
Donna Hill
John Jansen
LeeAnn Kozak
David Morris
Mike Parris
Dan Patel
Jim Redwine
Dan Warren

Randy Bunt
Bill Burns
David Crawley
Robin Dyle
Jeff Gasser
Randy Glisson
Brian Griner
Alvin Harris
Forrest Hundley
Richard Loftin
Lou Long
Mike Macfarlane
Chalmer Myer
Dennis Rickertsen
Bobby Shewmake
Dennis Swann
Ashfaq Taufique
Keith Turnage
Todd Youngblood

Mark Berry
Charles Boohaker
Fred Ellis
Pat Evans
Dale Evelyn
Keith Harrison
Jeremiah Haswell
Tom Johnson
Randy Jones
Lamar Larrimore
Jim Lofe
Larry Monroe
Larry Moore
Frank Morton
Russell Noble
Ronnie Pate
John Sorge

Danny Bates
Alton Comans
Cedric Daniels
Alan Holloman
Shih-Min Hsu
David Mitchell
Boyd Nation
Bill Norton
Rod Sauls
Paul Shahan
Joe Schatz
Perry Stowe
Jack Varner
Pradeep Vitta
Chuck Wallis
Ed Wade
Tony Wu

Red indicates chair positions

EPRI Sector Participation

Cost History

EPRI Segment	1994	EPRI Dues		2006
		1998	2005	
Marketing ¹				
Nuclear Power				
Generation ²				
Power Delivery				
Environment				
TOTAL				

- 1 - Includes Distributed Resources and Power Quality
- 2 - Includes Wholesale Power Markets



EPRI Decision Process

Lamar Larrimore

***Manager, EPRI Technology Transfer
(METT)***

2006 EPRI Agreement Highlights

- **Master Agreement and Research Portfolio Agreement**
- **Consolidation of:**
 - **Membership Agreement**
 - **Master Utility License Agreements**
 - **TC Agreements – basic terms**
 - **Cofunding Agreements – basic terms**
- **Cost savings:**
 - **Greater discount for PDM and Generation**
 - **Credit pool for access to past products**
- **Long term:**
 - **5-year agreement for all sectors**
 - **Flexible opt out provisions**

Schedule for EPRI 2007 Membership Decision

June 1	EPRI 2007 membership decision package received
June 20	Final Price Sheet available
July 6	EPRI 2007 membership decision meeting
August 15	Team leaders (Baldwin, Jones, Wilson) provide program recommendations to Lamar Larrimore
Sept 15	Integrated EPRI recommendation briefed to Southern Company executives
October	Preliminary response to EPRI
Nov & Dec	Negotiations with EPRI
Mid-Dec	Final commitment and RPA to EPRI

EPRI Program Evaluation for 2007

EPRI Program Number		Total Price for Recommended Items	\$
EPRI Program Title			
Advisor			

A. EPRI Program Area Selection

Please indicate below your recommendations for this program: entire programs, selected elements or none

PROGRAM NUMBER	PROGRAM TITLE	PROGRAM PRICE	PROJECT SET PRICE	PROJECT PRICE	SELECTION

B. Southern Company Evaluation:

Participants

Process

C. Program Related Meetings

D. Key Deliverables for 2004 thru 2006:

E. Description of Program Benefits for 2007

Project/Program	Title	Benefit

F. Comments and Summary

G. Program Rating

Recent (2004 – 2006) _____

Next Year (2007) _____

Where 3 = Value greatly exceeds investment

2 = Value exceeds investment

1 = Value less than investment



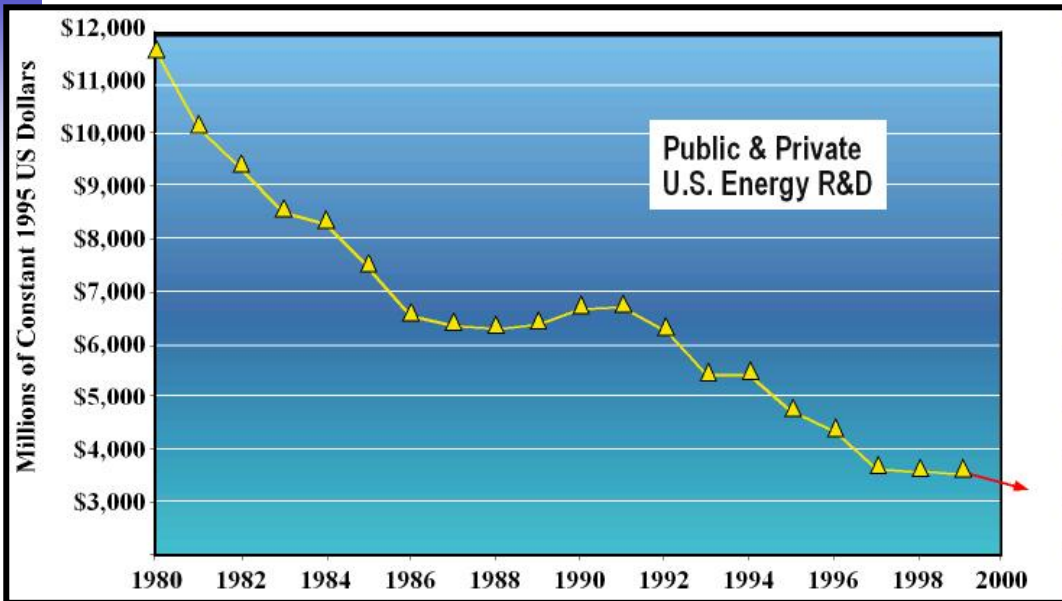
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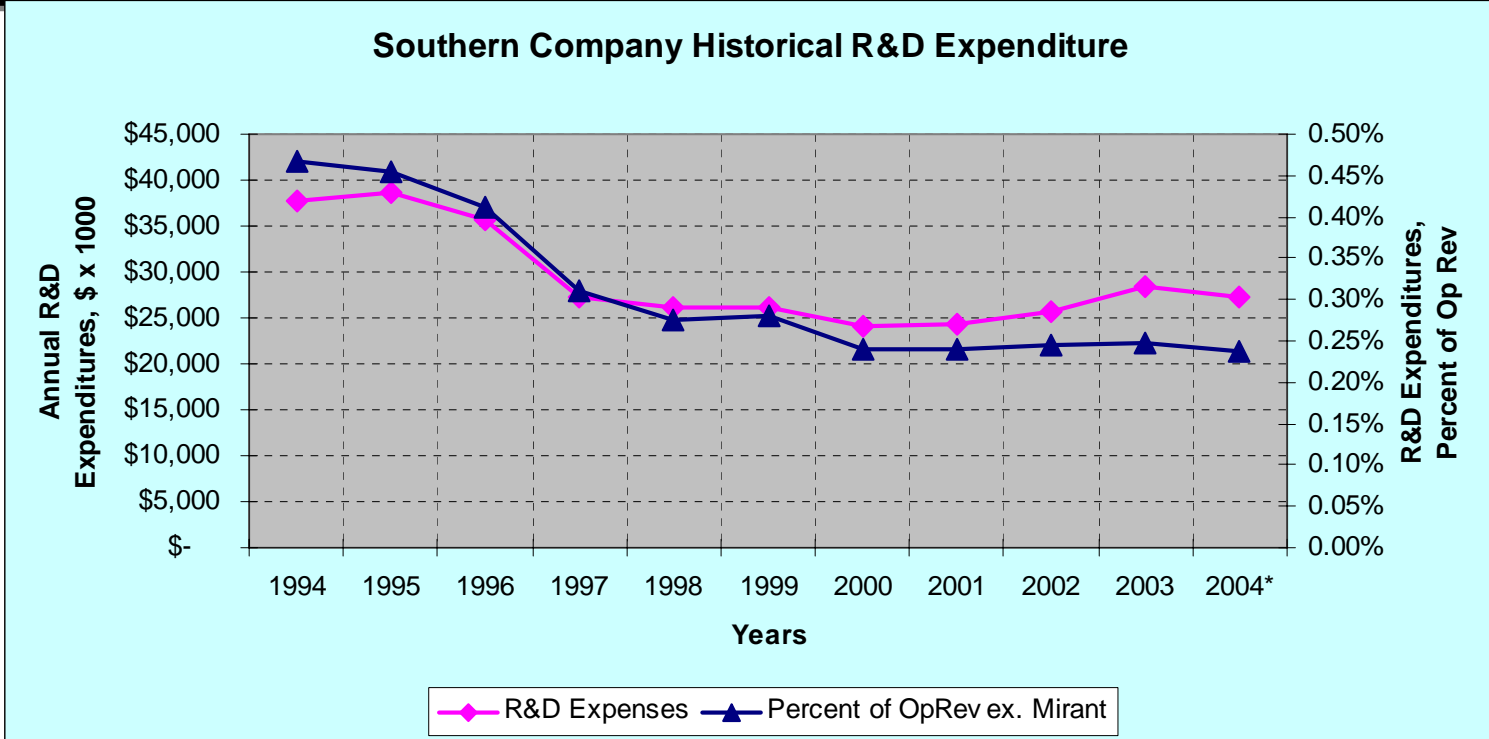
Bringing EPRI Benefits Back to Southern Company

Paul Bowers

President, Southern Co Generation



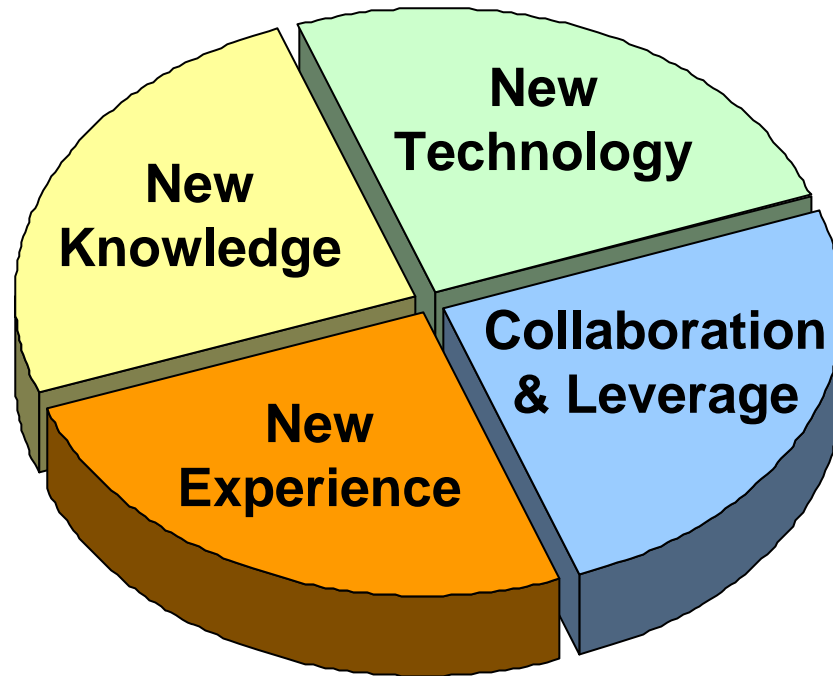
Energy Research Investment



Summary: EPRI Value and Benefits

- EPRI leverage (20 to 1) reduces research costs
- EPRI results allow Southern to shape regulatory proceedings that directly affect cost of business
- Enabling science is developed to prepare Southern for its next challenges (EPRI SS&T)
- Technology enables Southern to address its most difficult challenges: a characteristic important to investment and stakeholder groups
- EPRI products are deployed throughout Southern
- The value derived from EPRI R&D greatly exceeds Southern's cost of participation

EPRI Provides:



Bottom Line:

Southern Company must increase the value it derives from these EPRI products.

Examples of EPRI Value

- Health-risk studies such as SEARCH and ARIES which provide sound science to regulators
- Environmental compliance technologies using existing infrastructure, such as mercury control solutions
- Long-time support for IGCC generation platforms
- Materials research which has reduced the frequency of outage inspections needed at nuclear plants
- Low-cost energy efficiency and conservation solutions
- Deployment of reliability analysis software and demo of intelligent universal transformer in T&D systems

Responsibilities of Southern Company Advisors

- Ensure that Southern Company and industry needs are addressed by EPRI
- Be proactive and involved in EPRI Programs
- Foster portfolio research management
- Monitor, champion, and disseminate results
- Represent Southern Company as a technology leader in the industry

EPRI Product Information

GEMTech



EPRI and Other Technology for Southern Company Generation & Energy Marketing Fall 2004

GEM employees serve as advisors to EPRI in the planning and execution of technology development programs. The following summaries are provided by these advisors to highlight EPRI products that are useful now to GEM sites, or that are in the pipeline for future application.

Ready Now

Guidelines for Reducing the Time and Cost of Turbine-Generator Maintenance Overhauls and Inspections - These documents provide guidance for reducing the conventional T-G maintenance overhaul based on field-proven techniques and best practices. Work elements include: generator repair, generator rotor refurbishment, turbine casing weld repair, improvements to the TG-ALIGN shaft alignment program, and development of material for a training workshop. (Charles Boohaker: 8-257-7537)

Cyclic Operation of Combined-Cycle Plants (1004796) - Design, maintenance, reliability, and cost impacts are consolidated in this report covering CC gas turbines, HRSG, and balance of plant. Provided in the report are plant interviews, RAM statistics, and probability estimates of specific problems that occur to plant equipment and systems due to cycling. (Russell Noble: 8-257-7232)

Evaluation of SNCR Trim on 145MW & 375MW T-fired Boilers (1009810) - This technical report documents the demonstration results of SNCR Trim at Plant Barry Units 2 and 4. Results showed 20-35% NOx reductions over the load range. (Keith Harrison: 8-257-6832)

Visits to Five SCR-Equipped Power Plants (1010903) - This report describes site visits to document the planning, construction, operation, and maintenance of SCR systems. Sites profiled in this report include: AEP's Amos Plant, Detroit Edison's Monroe Station, Duke Energy's Cliffside Station, Progress Energy's Mayo Plant, and Alabama Power's Plant Miller. (Keith Harrison: 8-257-6832)

Development of I&C Strategies for Unit Flexible Operations (100846) - This report, prepared by PowerGen, provides guidance for I&C strategies for the flexible operation of power plants. Included are an overview of flexible operations, the I&C implications, operating procedures to minimize plant damage, and examples of I&C problems arising from flexible operations. (John Sorge: 8-257-7426)

Development and Demonstration of Mercury Control by Dry Technologies (1004262) - This report describes the results of mercury control technology evaluations for power plants with ESPs and baghouses, by the injection of sorbents. These materials capture the mercury, and are collected along with the fly ash. Although these technologies are not being installed or operated in our plants today, we expect mercury regulations in the near future. This report can serve as a view of what we think will be an important additional process for our plants. (Mark Berry: 8-257-7772)

Phosphate Continuum & Caustic Treatment Guidelines (1004196, 1004188) - These reports provide technical guidance for establishing effective economical control of corrosion and deposition in drum boilers employing the solids type treatment concept. From this work, a comprehensive set of unit-specific chemistry control procedures has been developed for each GEM Unit. (Ronnie Pate: 8-508-7850)

Gasification Technology Status (1009769) - This technical status report covers the lessons learned from the commercial operating experience at IGCC plants. The current gasification experience includes

coal, petroleum residuals, biomass and wastes. The economics and issues pertinent to the commercial deployment of IGCC technology are also addressed. (Frank Morton: 8-824-6574)

In the Pipeline

Aerosol Emissions Control Interest Group - EPRI has initiated this new group to facilitate sharing of methods to control SO₃. Earlier this year EPRI issued a report on SO₃ Mitigation Strategies to assist plants in handling these emissions. (Larry Monroe: 8-257-7772)

CO₂ Capture and Sequestration Interest Group - EPRI has also initiated a CO₂ capture and sequestration interest group to coordinate participants, co-funding, and results from new CO₂ demonstration projects begun in 2004 and proposed for 2005. (Nick Irvin: 8-257-6805)

Effects of Flexible Operation on Turbines and Generators - This study will identify steam turbine-generator components and subsystems that experience increased life-consumption under proposed flexible plant operation. It will quantify typical damage rates where possible, and identify operational strategies that minimize damage. (Charles Boohaker: 8-257-7537)

Assessment of Impacts of Chlorine on Corrosion - This report will describe a recently developed algorithm to quantify chlorine-based waterwall corrosion as a function of fuel quality and boiler. Results are presented of recently reported case studies and tests. (Charles Boohaker: 8-257-7537)

Assessment of Multi-Point Ammonia Measurement Systems - Assessment of commercially available continuous multi-point ammonia monitors will be undertaken to determine operational issues affecting accuracy and reliability of these instruments. Spatial resolution of ammonia slip from SCR and SNCR systems lead to potential feedback control of the reagent injection and optimization of reagent distribution in response to changes in NOx profiles over the load range. (Keith Harrison: 8-257-6832)

SCR Catalyst Management Software - With the direction of utility advisors, EPRI is developing a universal software for use in SCR catalyst management programs. This tool, targeted for issue of the beta-version by year end, will use catalyst sample data to predict schedules for catalyst replacement, financial and operational impacts of catalyst regeneration technology, or for other catalyst procurement evaluations. (Keith Harrison: 8-257-6832)

Online Heat-Rate Monitors - This project will summarize the findings from several installations of on-line heat rate monitors including those installations sponsored by EPRI, one of which is at Plant Miller. The report provides information as to the application, usability, and complications of using these systems in a production environment. (John Sorge: 8-257-7426)

Technical Evaluations of Emerging Integrated Emissions Control Processes - This model will estimate integrated emissions control retrofit costs and will be available by the end of the year. The beta version of this product is being evaluated by Southern Company. (Larry Monroe: 8-257-7772)

State-of-the-Art FGD - This early-2005 product will evaluate scrubber designs and construction relative to best approaches in the industry. EPRI contractors serve to collect the large amount of information needed from utilities to be able to make such comparisons. (Larry Monroe: 8-257-7772)

Value of Good Cycle Chemistry - A continuing activity to quantify the value to plants of cycle chemistry management. The work includes case studies and operational guidance for out-of-spec. chemistry. (Ronnie Pate: 8-508-7850)



EPRI Technology Development

EPRI - Mission Statement

EPRI provides science and technology-based solutions of indispensable value to global energy customers and to society.

Provides solutions that address:

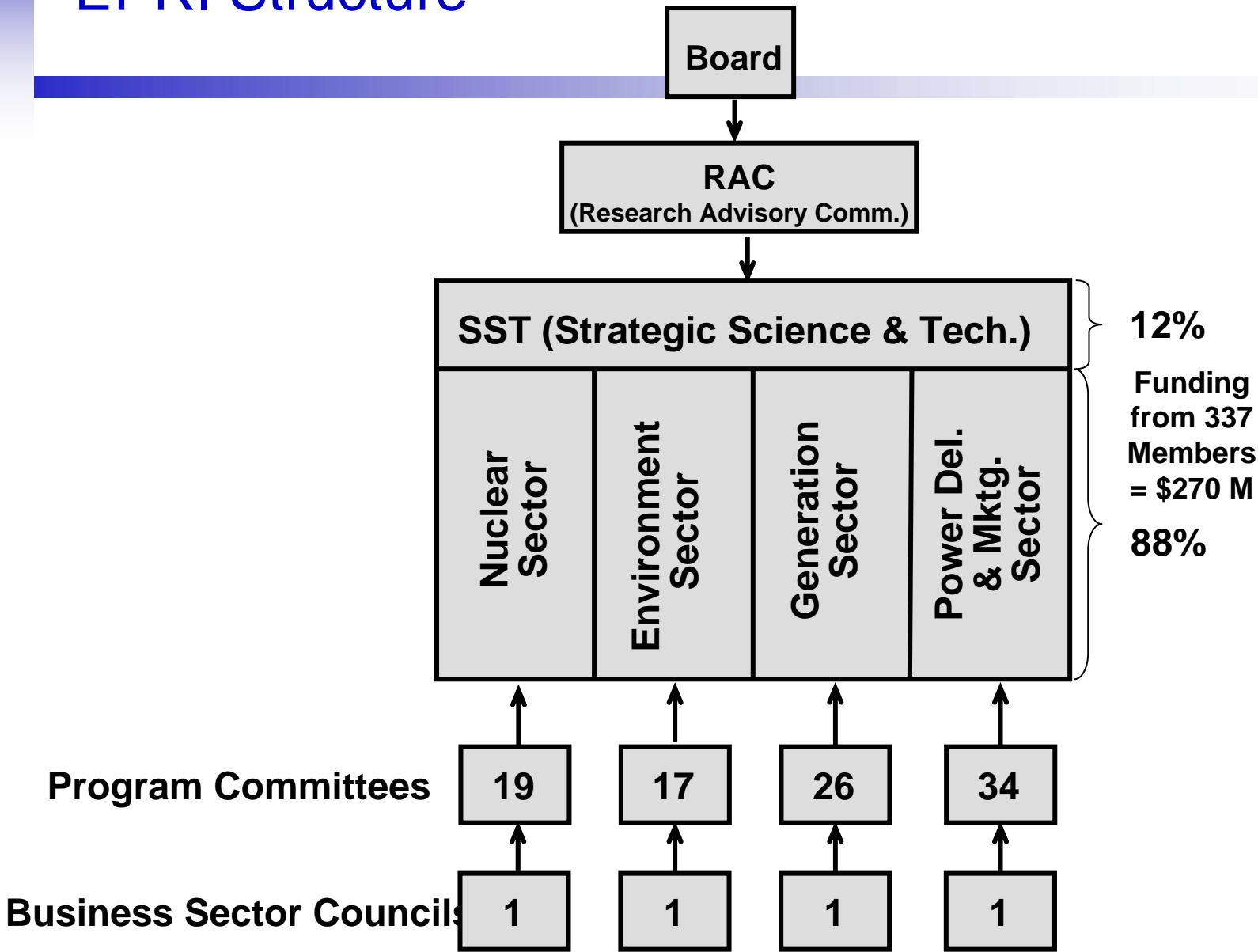
- Power supply vulnerability
- Value of electricity services
- Accelerated productivity
- Energy / environment conflict
- Global sustainability



EPRI Summary

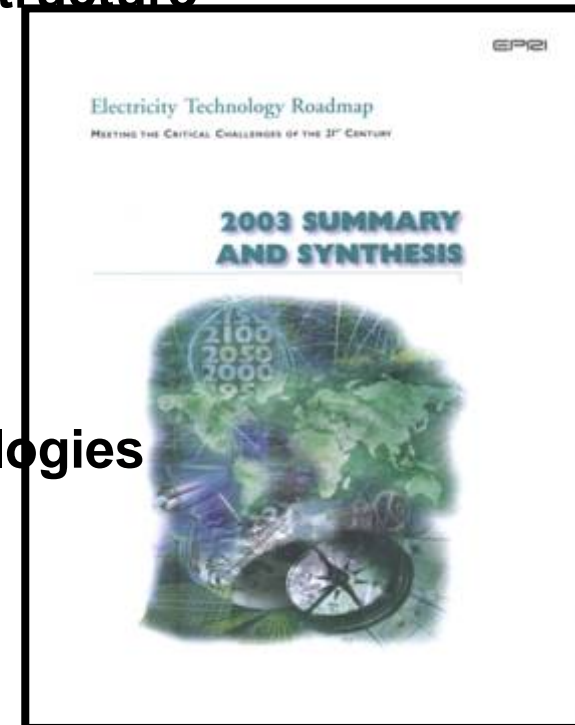
- Annual Revenue \$270 million
- Members 337 utilities
(100% of nuclear, 70% of all)
- International Members 115
- Programs 96
- Location Palo Alto, Ca.

EPRI Structure



EPRI Technology Roadmap

1. Transmission capacity, control and stability
2. Infrastructure for digital society
3. Robustness and security of electricity infrastructure
4. Value of energy storage technology
5. Transforming electricity markets
6. Electricity-based transportation markets
7. High-efficiency end-use technologies
8. Advances in enabling technologies
9. Strengthened portfolio of generation technologies
10. Universal global electrification
11. Carbon capture and storage
12. Ecological asset management
13. Improving water availability and quality
14. Environmental science



EPRI Technical Research Programs



Generation and Distributed Resources

- ♣ Production Availability and Cost Control
- ♣ Environmental Controls
- ♣ Strategic Generation Options



Nuclear Power

- ♣ Component Reliability and Safety
- ♣ Nuclear Operations and Asset Management
- ♣ Nondestructive Evaluation
- ♣ Plant Technology



Power Delivery and Markets

- ♣ Power Markets
- ♣ Grid Reliability & Security
- ♣ Power Delivery Mgmt
- ♣ Transmission
- ♣ Substations
- ♣ Distribution
- ♣ Power Quality
- ♣ Market Data and Intelligence
- ♣ Electric Transportation
- ♣ Customer-Driven Technologies



Environment

- ♣ Air Quality
- ♣ Global Climate Change
- ♣ Land & Groundwater
- ♣ Water, Watershed, and Ecosystems
- ♣ EMF Health Assessment and RF Safety
- ♣ Occupational Health

EPRI Technology Transfer Opportunities

- eTip Profiles
- Project Reports
- Technical Conferences
- Program Committee Meetings
- EPRIWeb

