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OFFICE OF THE SECRETARY  
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FEDERAL ENERGY REGULATORY COMMISSION

Southwest Power Pool, Inc.	)	Docket No. RT01-34-000
	)	
GridFlorida LLC	)	Docket No. RT01-67-000
Florida Power & Light Co.	)	
Florida Power Corporation	)	
Tampa Electric Co.	)	
	)	
Carolina Power & Light Company	)	Docket No. RT01-74-000
Duke Energy Corporation	)	
South Carolina Electric & Gas Company	)	
GridSouth Transco, L.L.C.	)	
	)	
Avista Corporation	)	Docket No. RT01-35-000
The Bonneville Power Administration	)	
Idaho Power Company	)	
The Montana Power Company	)	
Nevada Power Company	)	
PacifiCorp	)	
Portland General Electric Company	)	
Puget Sound Energy, Inc.	)	
Sierra Pacific Power Company	)	
	)	
Southern Company Services, Inc.	)	Docket No. RT01-77-000
	)	
Southwest Power Pool, Inc.	)	Docket No. RT01-34-000
	)	
PJM Interconnection, L.L.C.	)	Docket No. RT01-2-000
Allegheny Electric Cooperative, Inc.	)	
Atlantic City Electric Company	)	
Delmarva Power & Light Company	)	
Jersey Central Power & Light Company	)	
Metropolitan Edison Company	)	
PECO Energy Company	)	
Pennsylvania Electric Company	)	
PPL Electric Utilities Corporation	)	
Potomac Electric Power Company	)	
Public Service Electric & Gas Company	)	
UGI Utilities Inc.	)	
	)	

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<b>Entergy Services, Inc., on behalf of the</b>	)	<b>Docket No. RT01-75-000</b>
<b>Entergy Operating Companies:</b>	)	
<b>Entergy Arkansas, Inc.</b>	)	
<b>Entergy Gulf States, Inc.</b>	)	
<b>Entergy Louisiana, Inc.</b>	)	
<b>Entergy Mississippi, Inc. and</b>	)	
<b>Entergy New Orleans, Inc.</b>	)	
	)	
<b>Avista Corporation</b>	)	<b>Docket No. RT01-15-000</b>
<b>The Montana Power Company</b>	)	
<b>Nevada Power Company</b>	)	
<b>Portland General Electric Company</b>	)	
<b>Puget Sound Energy, Inc.</b>	)	
<b>Sierra Pacific Power Company</b>	)	

(Not Consolidated)

**COMMENTS OF THE ELECTRIC POWER RESEARCH INSTITUTE**

Pursuant to Rule 212 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission (FERC or Commission), 18 C.F.R. §385.212, and the Commission's "Notice of Filings", the Electric Power Research Institute, Inc. (EPRI) hereby moves to file comments in the above-captioned proceedings.<sup>1</sup>

**I. Summary**

As a result of the most fundamental restructuring of the electric industry in more than a century, the interstate transmission grid is being utilized in a manner that was not contemplated when it was originally designed and constructed. Consequently, the reliability of the electric power grid has been threatened and increasing outages across the United States have had significant adverse consequences for regional economies and electric consumers. In response to these

<sup>1</sup> While EPRI respectfully requests that the Commission consider its comments, EPRI does not seek to intervene and become a party to the above-captioned proceedings. EPRI further requests that it not be listed on the official service lists compiled for these proceedings.

concerns, EPRI has been implementing a number of research and development initiatives that would enhance reliability and ensure that consumers continue to be served in the most reliable and affordable manner possible. To achieve this objective, it is critical that funding levels for EPRI's power delivery-related research initiatives increase.

EPRI, therefore, urges the Commission to encourage RTOs to join EPRI and fund EPRI's research and development programs. For those RTOs that do join EPRI and fund such initiatives, EPRI further requests that the Commission allow RTOs to recoup the associated costs in their transmission rates.

## **II. Introduction**

EPRI is a non-profit, membership corporation incorporated by U.S. electric utilities in 1972 as the Electric Power Research Institute to manage a national, public/private collaborative research program on behalf of EPRI members, their customers, and society. Today, EPRI has over 1,000 members consisting of government-owned utilities (both federal and non-federal), rural electric cooperative associations, investor-owned utilities, Independent System Operators (ISOs), foreign (international) utilities, independent power producers, and governmental agencies engaged in funding electricity-related research and development. EPRI is a tax-exempt scientific organization under Internal Revenue Code Section 501(c)(3) and makes its research results available to the interested public on a non-discriminatory basis through its technology transfer program, including publication of reports, licensing of intellectual property, and sponsoring seminars and conferences. In

operation for more than 25 years, EPRI has gained a worldwide reputation for excellence and credibility in scientific research and technology development related to electricity. EPRI's current R&D program spans every aspect of power generation, delivery and use. In 2000, EPRI members may choose to participate in more than 100 different technical areas, referred to as annual research "targets" in five product sectors: Environment, Generation, Nuclear Power, Power Delivery, and Retail. In addition, EPRI provides a Strategic Science & Technology Program for longer-term research and sponsors special R&D initiatives that are separate from the annual program offering. EPRI is part of a family of companies that includes a wholly owned, for-profit, technology services subsidiary and other affiliated entities.

One of EPRI's most important collaborative opportunities is the ongoing development of an Electricity Technology Roadmap, a comprehensive document exploring the opportunities for, and impediments to, electricity-based innovation over the next 25 years and beyond. Thus far, over 150 organizations have participated with EPRI and its members in this endeavor to increase electricity's value to society. EPRI has been leading this roadmapping effort to strengthen the value of public and private R&D investment for the benefit of society.

### **III. Background**

FERC's Order 2000, issued in December 1999 and modified in February 2000 in Order 2000-A (Order), codifies the minimum characteristics and functions for Regional Transmission Organizations (RTOs) and requires all public utilities that own electric transmission facilities to file with FERC either a voluntary proposal to

participate in an RTO or an explanation for non-participation. FERC's Order also specifies innovative rate treatments that may be available to RTO participants and establishes a collaborative process to promote the formation of RTOs. The stated purpose of the Order is to promote competition in wholesale electricity markets by eliminating transmission-related barriers between power sellers and buyers. These barriers include reliability concerns associated with increased use of the grid, inefficient congestion management on transmission facilities, and uncertainty associated with transmission planning and expansion, among other concerns.<sup>2</sup>

Order 2000 required all transmission-owning public utilities to make the requisite filing with FERC by October 15, 2000 and members of all Commission-approved ISOs to file by January 15, 2001. EPRI's comments are directed to the above-listed dockets set forth in the caption, which were opened for filings made by October 15 by those entities proposing to form RTOs. It is our intent also to file similar comments in additional dockets that are expected to be opened in response to the future ISO filings in January.

#### **IV. Reliability-Related Initiatives**

##### **A. The Need For Additional Reliability-Related Research and Development**

As the electricity industry undergoes its most fundamental restructuring in a century, the challenge of maintaining the reliability of the electricity system is growing. With dramatic increases in inter-regional bulk power transfers and

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<sup>2</sup> See presentation by Douglas W. Smith, FERC General Counsel, "The FERC's Rule on Regional Transmission Organizations," to the American Bar Association, June 8, 2000.

accelerating complexity of transactions among parties, the electric power grid is being used in ways for which it was not originally designed. Grid congestion and unusual power flows are increasing at the same time as customer expectations of reliability are rising to meet the needs of a digital society. As a result, limitations of the current system are becoming apparent, manifested by increasing frequency of reliability problems, including outages affecting large numbers of customers at a huge cost to society. For example, the widespread outage in the Western United States on August 10, 1996 has been estimated to have cost nearly \$1 billion<sup>3</sup> Since then, several other major transmission and distribution system outages have occurred in various regions and urban areas, primarily during the summer months.

These challenges to the reliability of today's transmission systems can be met only through enhanced R&D and the application of advanced technologies. For example, power-electronic control and wide-area management technologies that are available or under development can help to alleviate the growing potential for outages, power interruptions, and operational constraints in an open-access electricity grid. The estimated 10-year funding requirement for strengthening the power delivery infrastructure, as recommended in EPRI's Electricity Technology Roadmap Initiative, is \$1 billion. <sup>4</sup>Yet, the investment in the necessary supporting R&D is not being made at sufficient levels because of the lack of adequate incentives. As a result of deregulation and restructuring, funding of collaborative R&D through EPRI has declined significantly from more than \$500 million in 1995 to less than \$400 million

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<sup>3</sup> Douglas, John, "Power Delivery in the 21<sup>st</sup> Century," EPRI Journal, (Summer 1999, p. 20.)

in 2000. This includes especially sharp declines in funding of longer-term, strategic research from approximately \$200 million per year in 1995 to less than \$40 million in 2000.

In August of 1999 EPRI held its annual Summer Seminar, a symposium of our Board of Directors and our outside Advisory Council, which was attended by representatives from public utility commissions, academia, and the federal government, as well as industry stakeholders. The seminar addressed "Issues and Innovations for 21<sup>st</sup> Century Reliability" and concluded that "North America is closer to the edge, in terms of the frequency and duration of severe power outages, than at any time in the last 35 years," and that the "root cause of this threat is the disincenting of investment" as a result of "uncertainty in both the institutional and market structure guiding the power delivery system." Among the recommendations that resulted from the symposium was that EPRI evaluate power system vulnerabilities, develop a forum to help individual utilities review evaluations and implement response plans, and ensure development of needed new technologies.

#### B. EPRI's Power System Reliability R&D Efforts

In response to those recommendations, EPRI established a separate initiative, the Reliability Enhancement Program, in addition to its ongoing Power Delivery research program. This initiative was formed in the Fall of 1999 to focus on understanding the root causes of recent outages and identify ways to reduce the risk

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<sup>4</sup> "EPRI Electricity Technology Roadmap: 1999 Summary and Synthesis," July 1999, Vol. 1, Chapter 2, Table 2-1, page 39.

of additional reliability problems during the next two years. The program includes a risk assessment of the nationwide transmission grid by North American Reliability Council (NERC) regions and has been endorsed by NERC, the Association of Edison Illuminating Companies, the IEEE Power Engineering Society, and chief executive officers of many utilities, both public and private. Since launching the initiative nearly \$6 million has been raised for the program in which 63 utilities are participating.

In August 2000, EPRI's Summer Seminar focused on the evolution of the delivery system reliability challenge to the next level, "Creating the Infrastructure for the Digital Society." This symposium analyzed the implications of the emerging Internet economy, which depends upon a server and fiber-optic based network that demands an extremely high level of power reliability and quality. The recommendations from this symposium emphasized the need to develop certain areas of electricity system infrastructure, including 1) technology to enable increased capacity, reliability and functionality in high voltage transmission networks to support a stable wholesale power market; 2) improved real-time control of electricity distribution systems, plus new interconnection standards and real-time net metering capabilities to integrate distributed resources and facilitate differentiated services, 3) standardization of digitally-based electric energy devices and appliances, and 4) enabling the electricity service network to keep pace with the telecommunications transformation.

In response to these recommendations, EPRI is forming a Consortium for Electric Infrastructure to Support a Digital Society (CEIDS) as a public/private R&D

collaboration to develop and deploy technologies that ensure digital-quality electricity for society. The CEIDS initiative will be launched in the 1<sup>st</sup> Quarter of 2001. Its objective is to raise an aggregate of \$150 million from utilities, other private sector entities, private foundations, and government agencies for a four-year technology development program to encompass reliability studies; high temperature superconducting cables and storage technologies; post-silicon semiconductors; next generation Flexible AC Transmission System (FACTS) technologies; demand-side response technologies; distributed resources; redesign of digital equipment; and high reliability power technologies such as uninterruptible substations and power quality parks.

In addition to the Reliability Enhancement Program and the CEIDS initiative, EPRI's ongoing R&D program currently includes six targets focused on transmission system issues--Overhead Transmission, Underground Transmission, Substation Operation and Maintenance, Substation Assets Utilization, Grid Operations and Management, and Grid Planning and Development. EPRI also recently has designed a membership offering of R&D programs especially for the evolving RTO sector.

C. Incentives for RTO Participation in EPRI

RTOs currently are eligible to join EPRI and to fund its collaborative research program. In addition, in recognition of the importance of involving the RTO community in EPRI, our Board of Directors recently approved an amendment to the EPRI Bylaws to create a seat on the EPRI Board designated for the RTO sector.

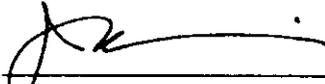
In light of the above-described threats to the power delivery system and the cost to society of continued under-investment in reliability related R&D, it is critical that appropriate incentives be provided to encourage that investment by the evolving RTO sector.

We therefore urge the Commission to encourage RTOs to join EPRI and fund EPRI's Power Delivery R&D programs, including the relevant research targets and the reliability and digital society initiatives. For those RTOs that do join EPRI and fund such targets and initiatives, we recommend that the Commission allow RTOs to recoup the associated costs in their transmission rates.

**V. Conclusion**

EPRI respectfully requests that the Commission consider our comments in connection with all applications to form RTOs and proposed RTO tariffs.

Respectfully submitted,

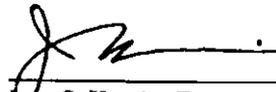
By:   
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November 16, 2000

**CERTIFICATE OF SERVICE**

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in these proceedings in accordance with the requirements of Rule 2010 of the Rules of Practice and Procedure, 18 C.F.R. §385.2010

Dated at Palo Alto, California, this 16th day of November 2000.



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