

## 2009 42nd Annual Frontiers of Power Conference

### ABOUT THE CONFERENCE

Distributed generation, especially wind-electric conversion, is gaining importance in the electric utility scenario. Also, renewables in general and energy storage are expected to play an increasing role in the evolution of the Smart Grid. The presentations in the 42nd annual conference reflect these trends ranging from transmission and distribution reliability assessment, smart grid, technical aspects of wind generation, human resource needs, educational aspects and public policy issues.

### KEYNOTE SPEAKER

#### **Peter W. Sauer**

Grainger Professor of Electrical and Computer Engineering  
University of Illinois at Urbana-Champaign  
Urbana, Illinois

### KEYNOTE SPEAKER

#### **John L. Neufeld**

Professor  
Department of Economics  
University of North Carolina at Greensboro  
Greensboro, North Carolina

The Frontiers of Power Conference seeks to provide for the frank and open discussion of the current problems facing the electric utility industry. Over the years, the scope of this conference has expanded to include several critical problem areas of power technology. These problems are not only technical but political and economic as well.

Engineers, engineering managers, and supervisors associated with planning, designing, or operating power generating stations and transmission and distribution systems will find this program of special relevance to their work.

Participation is invited from all those associated with electric utilities, electric power production facilities, power equipment manufacturers, consultants for municipal and rural electric utilities, universities, and government agencies.

This Forty-second Annual Conference is a continuation of a program first started in the early 1960's at Oklahoma State University, Stillwater.

### Monday, October 26, 2009

8:00 Registration & Continental Breakfast  
Advanced Technology Research Center (ATRC)

9:00 Conference Opening—ATRC Room 102  
Introduction and Welcome  
**Rama Ramakumar**  
Conference Director  
Regents Professor and  
PSO/Albrecht Naeter Professor  
Director  
Engineering Energy Laboratory  
**Keith A. Teague,**  
Professor and Head  
School of Electrical and  
Computer Engineering  
**Marlene I. Strathe**  
Provost and Senior Vice-President  
Oklahoma State University

### 9:30 KEYNOTE PRESENTATION

#### ***Status and Prospects for Power Engineering Education***

Peter W. Sauer  
Grainger Professor of Electrical and  
Computer Engineering  
University of Illinois at Urbana-  
Champaign  
Urbana, Illinois

### 10:30 Break

### 10:45 KEYNOTE PRESENTATION

#### ***Toward a More Perfect Grid: Institutions, Public Policy and the Historical Development of Large-Scale Electricity Supply Networks in the U. S.***

John L. Neufeld  
Professor  
Department of Economics  
University of North Carolina at  
Greensboro  
Greensboro, North Carolina

### 11:45 Lunch – Vogt Terrace Room, ATRC

1:00 Technical Paper Session  
Moderator: David Osburn  
Director  
Engineering & Operations  
Oklahoma Municipal  
Power Authority  
Edmond, Oklahoma

#### ***AEP's gridSMART<sup>sm</sup> Initiative: Distribution Grid Management***

Michael T. Campbell  
Engineer  
Distribution Reliability, Planning  
and Engineering  
American Electric Power/  
SWEPCO  
Fayetteville, Arkansas

#### ***Accommodating Large Amounts of Variable Generation in North America***

Mark G. Lauby  
Director  
Reliability Assessments and  
Performance Analysis  
North American Electric Reliability  
Corporation  
Princeton, New Jersey

#### ***A Review of Impact of Distributed Generation on Utility Companies***

Charles Panicker  
Graduate Student  
John N. Jiang  
Assistant Professor  
School of Electrical and Computer  
Engineering  
University of Oklahoma  
Norman, Oklahoma

### 2:30 Break

3:00 Technical Paper Session  
Moderator: David Nunez  
Manager  
Horseshoe/Red Power Plant  
OG&E Electric Services  
Oklahoma City, Oklahoma

#### ***Permanent Magnet Motor Technology and its Application on Mechanical Draft Cooling Towers***

Robert McElveen  
Senior Development Engineer  
Variable Speed and Specialty Motors  
Baldor Electric Company  
Greenville, South Carolina

#### ***Commercially Available Technologies for Electricity Storage***

Perlekar Tamtam  
Graduate Student  
Ward Jewell  
Professor  
Electrical and Computer Engineering  
Wichita State University  
Wichita, Kansas

#### ***Transmission Planning and Voltage Stability in the Dallas/Fort Worth Area***

Roy Boyer  
Special Studies Group  
Transmission Planning  
Oncor Electric Delivery Company  
Dallas, Texas

### 4:30 Adjourn

7:00 Banquet  
Sequoyah Room,  
280 Student Union

**Tuesday October 27, 2009**

8:15 Convene - Continental Breakfast

8:45 Technical Paper Session

Moderator Edwin (Bud) Averill  
Project Engineer  
Grand River Dam Authority  
Pryor, Oklahoma

*Probabilistic Assessment of the Output*

*Characteristics of Wind Electric Conversion Systems*

Manish Mohanpurkar  
Graduate Research Assistant  
R. Ramakumar  
Regents and PSO/Naeter Professor  
Electrical and Computer Engineering  
Director, Engineering Energy Laboratory  
Oklahoma State University  
Stillwater, Oklahoma

*An Approach to Estimate the Capacity Credit of  
Wind Electric Conversion Systems*

Sushil Arun Patil  
Graduate Student  
R. Ramakumar  
Regents and PSO/Naeter Professor  
Electrical and Computer Engineering  
Director, Engineering Energy Laboratory  
Oklahoma State University  
Stillwater, Oklahoma

9:45 Break

10:00 Technical Paper Session

Moderator: Kenneth R. Brand  
PSO Distribution Dispatch  
Public Service Company of  
Oklahoma  
Tulsa, Oklahoma

*Edge, Zephyrbox, and Wind Power Development  
in Oklahoma*

Steve Stadler  
Professor  
Allen Finchum  
Associate Professor  
Geography Department  
Oklahoma State University  
Stillwater, Oklahoma  
Scott Greene  
Professor  
Geography Department  
University of Oklahoma  
Norman, Oklahoma

*Unraveling the Myths on Low Energy Electrical  
Ignition*

Marcus O. Durham  
President,  
THEWAY Corp.  
Professor  
The University of Tulsa  
Robert A. Durham  
Chief Engineer  
THEWAY Corp.  
Tulsa, Oklahoma  
President  
D<sup>2</sup>Technologies  
Broken Arrow, Oklahoma

*Solar Generation Prospects and Effects on  
System Optimal Power Flow*

Piyasak Poonpun  
Associate Regional Transmission  
Engineer  
Independent System Operator  
Folsom, California  
Matthew Riddel  
Student  
Ward Jewell  
Professor  
Electrical and Computer Engineering  
Wichita State University  
Wichita, Kansas

11:30 Adjourn

**2009 PROGRAM COMMITTEE**

**Kenneth R. Brand,**  
Dispatch Operations Manager  
Public Service Company of Oklahoma,  
Tulsa, Oklahoma  
**Dan Lingelbach**  
Professor Emeritus  
Electrical & Computer Engineering  
Oklahoma State University, Stillwater,  
Oklahoma  
**David Nunez**  
Manager  
Power Supply Services  
OG&E Electric Services,  
Oklahoma City, Oklahoma  
**David Osburn**  
Director  
Engineering and Operations  
Oklahoma Municipal Power Authority,  
Edmond, Oklahoma

**2009 EXECUTIVE COMMITTEE**

**Harry R. Gordon**  
Vice President  
Distribution Region Operations  
American Electric Power  
Corpus Christi, Texas  
**Cindy Holman**  
General Manager  
Oklahoma Municipal Power Authority,  
Edmond, Oklahoma  
**Rama Ramakumar**  
Director  
Engineering Energy Laboratory,  
Regents and PSO/Naeter Professor  
Electrical & Computer Engineering,  
Oklahoma State University  
Stillwater, Oklahoma  
**John Wendling, Jr.**  
Vice President-Power Supply  
OGE Energy Corporation  
Oklahoma City, Oklahoma.

**2009  
42nd Annual  
Frontiers of Power  
Conference**

**October 26-27, 2009**



*42 Years of Serving the  
Oklahoma and Regional Power Industry*

Co-Sponsored by  
The Engineering Energy Laboratory  
and The School of Electrical and  
Computer Engineering

Conference Arrangements by  
The Engineering Energy Laboratory  
216 Engineering South  
Oklahoma State University  
Stillwater, Oklahoma 74078-5034

An Oklahoma State University  
Outreach Program

## GENERAL INFORMATION

**To Register** - Advance registration is requested and may be made by returning the enclosed registration form by **5:00p.m. Friday, October 16**. If you have questions concerning registration you may telephone the office of Engineering Energy Laboratory, (405) 744-9912 or e-mail [nancy.crenshaw@okstate.edu](mailto:nancy.crenshaw@okstate.edu). Those participating in the Conference should come to the central portion of the first floor of the Advanced Technology Research Center (ATRC), between 8:00 and 9:00 a.m., on Monday, October 26, 2009, to pick up Conference materials, complete registration and enroll for PDH units

**Fees** - Registration fee for the conference is \$150 which includes attendance at all sessions, one luncheon, a banquet, and a copy of the Conference *Proceedings*. Checks should be made payable to "Engineering Energy Laboratory". Non-OSU students can register at the lower rate of \$70.00 with all the privileges.

**Professional Development Units** -A total of seven and one-half Professional Development Units can be earned. Be sure to enroll at conference check-in.

**Cancellations** - Refunds will be made for any registrant who cancels by e-mail or telephone by noon Monday, October 19. Persons with confirmed registrations who do not attend and do not cancel by that time will be responsible for the entire registration fee.

**Transportation** - Major airlines serve Oklahoma City and Tulsa. U.S. Highway 177 passes north-south and State Highway 51 passes east-west through Stillwater. Interstate 35 intersects Highway 51 17 miles west of Stillwater. The Cimarron Turnpike connects Tulsa and Stillwater.

**Parking** - On-campus parking is available at the multilevel parking garage adjoining the Atherton Hotel on campus at \$10.00 per day. Parking on University streets and lots is restricted. A limited number of permits for persons with physical disabilities can be obtained by special request prior to the conference by contacting the conference office.

**Housing** – Conference Hotel: The Atherton Hotel at OSU is conveniently located inside the OSU Student Union building near the Conference facilities. Mention "Frontiers of Power Conference" for special rate. For those who prefer, there are a number of recommended hotels/motels in Stillwater. Participants are requested to make reservations by corresponding directly with the hotel/motel of their choice.

### Hotels

The Atherton Hotel at OSU University Campus 405-744-6835	Cimarron Hotel & Suites 315 N. Husband Street 405-372-2878
Days Inn 5010 West 6th (HWY 51) 405-743-2570	Fairfield Inn 418 E. Hall of Fame 405-372-6300
Hampton Inn & Suites 717 E. Hall of Fame 405-743-1306	Holiday Inn & Suites (New site & hotel) 715 S. Country Club Rd. 405-372-2018
La Quinta Inn & Suites 5500 W. 6 <sup>th</sup> 405-564-0599	Microtel Inn & Suites 423 E. Hall of Fame 405-372-7100

**Campus Information** – Additional information, including OSU and regional maps, parking, Atherton Hotel photos, etc. may be found on-line at [www.athertonhotelatosu.com](http://www.athertonhotelatosu.com) or at [www.okstate.edu](http://www.okstate.edu)

### For additional conference information contact:

Rama Ramakumar, Director  
Engineering Energy Laboratory  
Regents and PSO/Albrecht Naeter Professor  
Phone: 405-744-5157 / FAX: 405-744-9198  
E-mail: [rama.ramakumar@okstate.edu](mailto:rama.ramakumar@okstate.edu)  
-or-  
Nancy Crenshaw  
Conference Assistant  
Phone: 405-744-9912 / FAX: 405-744-9198  
E-mail: [nancy.crenshaw@okstate.edu](mailto:nancy.crenshaw@okstate.edu)

## 42nd Annual Frontiers of Power Conference October 26-27, 2009 Registration Form

### Registration Fees:

**Regular; \$150.00** (Includes Lunch and Banquet on Oct. 26, all continental breakfasts and breaks, plus a copy of the Conference *Proceedings* on CD).

**Non-OSU Student; \$70.00** (Includes Lunch and Banquet on Oct. 26, all continental breakfasts and breaks.) **OSU Students receive complimentary registration with ID.**

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_  
Street/Suite/Mail Stop etc.

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone Number(s) \_\_\_\_\_

E-mail Address \_\_\_\_\_

Please check the meals you will attend: Lunch \_\_\_\_\_ Banquet \_\_\_\_\_ Vegetarian? \_\_\_\_\_

**Payment:** Please submit all registrations paid on same check, PO# or credit card together.

Bill Company \_\_\_\_\_ Purchase Order Enclosed \_\_\_\_\_ Check \_\_\_\_\_ Credit Card (MC/VISA) \_\_\_\_\_

Name on Card \_\_\_\_\_ Number \_\_\_\_\_ Exp. \_\_\_\_\_

**To Register, return this completed form to Nancy Crenshaw no later than October 16, 2009.  
By E-mail to [nancy.crenshaw@okstate.edu](mailto:nancy.crenshaw@okstate.edu) or FAX 405-744-9198 or Phone 405-744-9912**

**or  
mail to 216 Engineering South, Stillwater, OK 74078-5034  
Checks should be payable to Engineering Energy Laboratory**