48th Annual Frontiers of Power Conference 2015

Stillwater, Oklahoma, USA
26-27 October 2015

ISBN: 978-1-5108-1426-4
### TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Paper No.</th>
<th>Keynote Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Mark Lauby</td>
</tr>
<tr>
<td></td>
<td>Senior Vice President and Chief Reliability Officer</td>
</tr>
<tr>
<td></td>
<td>North American Electric Reliability Corporation</td>
</tr>
<tr>
<td></td>
<td>Atlanta, Georgia</td>
</tr>
<tr>
<td></td>
<td><strong>Bulk Power System Reliability Challenges</strong></td>
</tr>
<tr>
<td>N/A</td>
<td>Pramod Khargonekar</td>
</tr>
<tr>
<td></td>
<td>Assistant Director, Directorate of Engineering</td>
</tr>
<tr>
<td></td>
<td>National Science Foundation</td>
</tr>
<tr>
<td></td>
<td>Washington, D. C.</td>
</tr>
<tr>
<td></td>
<td><strong>Evolving Electric Energy System:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Novel Research Directions</strong></td>
</tr>
</tbody>
</table>
TECHNICAL PAPERS

Der Resilience: Adapting DER for Essential Reliability
John Cooper
U. S Business Development Manager
Business Transformation & Engineering Solutions
Siemens Energy
Austin, Texas

Fairly Pricing Net Intervals While Keeping the Utility Financially Healthy
Mark B. Lively
Utility Economic Engineers
Gaithersburg, Maryland

Dynamic Resource Management in Micro-grid
Nishantha C. Ekneligoda
Assistant Professor
Electrical and Computer Engineering
Oklahoma State University
Stillwater, Oklahoma

Improving Power Plant Performance and Achieving Heat Rate Reductions to Meet Clean Power Plant Guidelines
Michael W. Smiarowski
Manager
Steam Product Line
Siemens Energy
Orlando, Florida

The Future of Power Systems: Microgrid Solutions
Don Dumich
Microgrid Application Director
S&C Electric Company
Chicago, Illinois
High Step-Up Ratio Modular Multilevel Transformer-less DC-DC Converter for HVDC Grid of Large Scale Photovoltaic Systems
Haider Mhieson
Graduate Student
Kirsch Mackey
Graduate Research Assistant
Waleed Alhousaini
Graduate Student
Roy McCann
Professor
Electrical Engineering
University of Arkansas
Fayetteville, Arkansas

A Look into Rooftop Solar PV Systems and its Increased Utilization in the CAISO
Marlin Tisdale, Jr.
American Maplan dba battenfeld-cincinnati US
Park City, Kansas

Geographical Data Based Optimization of Hybrid Solar PV-Wind Resources Connected in an Institutional Micro Grid System Using Multi-Objective Fitness Function
E. Chandira Sekaran
Associate Professor
S. R. Sivarasu
Assistant Professor
S. Vasantharathna
Professor and Head
Department of Electrical and Electronics Engineering
Coimbatore Institute of Technology
Coimbatore, India

A Study of the Impacts of Photovoltaics Penetration into the Libyan Power System
Abdulmunim Guwaeder
Ph.D. Candidate
R. Ramakumar
Regents Professor
PSO/Albrecht Naeter Professor
Director, Engineering Energy Laboratory
Electrical and Computer Engineering
Oklahoma State University
Stillwater, Oklahoma
Navin Shenoy
Ph.D. Candidate
R. Ramakumar
Electrical and Computer Engineering
Oklahoma State University
Stillwater, Oklahoma

Smart Integrated Renewable Energy Systems (SIRES) for Rural Communities
Zeel Maheshwari
Ph.D. Candidate
R. Ramakumar
Electrical and Computer Engineering
Oklahoma State University
Stillwater, Oklahoma

Prospects for Upgrading the Power Supply to the Al Zawea Refinery in Libya
Akram Gawedar
Ph.D. Candidate
R. Ramakumar
Electrical and Computer Engineering
Oklahoma State University
Stillwater, Oklahoma

Smart Charging and Parking of Plug-in Hybrid Electric Vehicles in Microgrids Considering Renewable Energy Sources
Zheming Liang
Ph.D. Candidate
Richard Guo
Assistant Professor
Electrical and Computer Engineering
Oklahoma State University
Stillwater, Oklahoma
A Study on Impact of Fault Location on Transient Energy
Di Wu
Research Scientist & Instructor
Milad Javadi
Ph.D. Candidate
John Jiang
OG&E Chair Professor
Electrical and Computer Engineering
University of Oklahoma
Norman, Oklahoma

Severity Assessment of Cybersecurity Threats Based on Transient Stability Analysis of Induced Circuit Breaker Misoperations
Muthanna Alsarray
Ph.D. Candidate
Roy McCann
Professor
Electrical and Computer Engineering
University of Arkansas
Fayetteville, Arkansas

The Effect of Control Area Method on Microgrid Concept Implementation in Bali Grid
Dimas Ruliandi
Graduate Student
Kaveh Ashenayi
Professor and Head
Hans S. Norberg Endowed Chair
Electrical and Computer Engineering
The University of Tulsa
Tulsa, Oklahoma

An Educational Tool Becomes an Economical Engineering Problem Solver and Hobbyist Dream: Raspberry Pi
Marcus O. Durham
Robert A. Durham
Jason A. Coffin
THEWAY Labs
Tulsa, Oklahoma
Transmission Line Positive Sequence Parameter Determination Using Synchronized Phasor Measurement
Shawn Westervelt
Recent MS Graduate
Wichita State University
Wichita, Kansas
Engineer
Omaha Public Power District
Omaha, Nebraska

Unit Commitment Using Fuzzy Logic for Large Number of Generators
Uday Kishan Renduchintala
Graduate Research Assistant
Chengzong Pang
Assistant Professor
Electrical and Computer Engineering
Wichita State University
Wichita, Kansas