

## SusTech Contributed Papers Program

### AE1: Alternate Energy I

#### Alternate Energy contributed papers I

Room: Hawthorne/Sellwood

Chairs: Mohamed Osman (Washington State University-Tri-Cities, USA), Quentin Ming (InnovaTek Inc, USA)

#### Optimal Generation Expansion Planning with Integration of Variable Renewables and Bulk Energy Storage Systems

Zhouxing Hu (Western Electricity Coordinating Council & Wichita State University, USA); Ward Jewell (Wichita State University, USA)

#### On the Usage of Storage Systems in the Presence of Ramping Costs and High Penetration of Renewables

Alberto J. Lamadrid (Lehigh University, USA)

#### Variable Energy Resource Induced Power System Imbalances: Mitigation by Increased System Flexibility, Spinning Reserves and Regulation

Aramazd Muzhikyan (Masdar Institute, UAE); Amro Farid (Masdar Institute, UAE); Kamal Youcef-Toumi (MIT, USA)

[Open]

#### Constrained Support Vector Machines for Photovoltaic In-Feed Prediction

Marcus Hildmann (ETH Zurich, Switzerland); Abhishek Rohatgi (National University of Singapore, Singapore); Göran Andersson (ETH Zürich, Switzerland)

### EE1: Energy Efficiency I

#### Energy Efficiency contributed papers

Room: Broad/Weidler

Chairs: Daniel N Donahoe, PE (1000 Kilometers & IEEE-USA, USA), Michael O'Keefe (Big Ladder Software, USA)

#### A Long-Term Case Study of Improved Residential Sustainability

Amy Fuchs Heidner, PE (The Rextor Group PLLC, USA); Dennis Heidner (The Rextor Group PLLC, USA)

#### Hybrid Calibration Methodology for Building Energy Models Coupling Sensor Data and Stochastic Modeling

Chad Miller (Portland State University, USA); Huafen Hu (Portland State University, USA); Lucas Klesch (AirAdvice Inc., USA)

#### Reliability-Driven Optimum Standby Electric Storage Allocation for Power Distribution Systems

Salman Kahrobaee (University of Nebraska-Lincoln, USA); Sohrab Asgarpoor (University of Nebraska-Lincoln, USA)

#### Information and Communications Technology based Solutions in Achieving Building Energy Efficiency

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Huafen Hu (Portland State University, USA); Geoffrey Jenks (Portland State University, USA); Catherine Huang (Intel Labs, USA); Milan Milenkovic (Intel Corporation, USA); Ulf Hanebutte (Intel Labs, USA)

### **Advancing Industrial Sustainability Through Energy Efficiency Improvements in Motors and Motor-driven Systems**

Baskar Vairamohan (EPRI, USA); Satish Rajagopalan (EPRI, USA); Marek Samotyj (EPRI, USA); Sudeshna Pabi (EPRI, USA)

### **SG1: Smart Grid I**

#### **Smart Grid contributed papers session I**

Room: Ross Island/Morrison

Chairs: Bob Bass (Portland State University, USA), Annabelle Pratt (Intel Labs, USA)

#### **Residential Water Heaters as a Grid-Scale Energy Storage Solution Using Model Predictive Control**

Kelcey Lajoie (Oregon State University, USA); Douglas Halamay (Oregon State University, USA); Ted Brekken (OSU, USA)

#### **Active Power Control of Photovoltaic Power Systems**

Anderson Hoke (University of Colorado Boulder, USA); Dragan Maksimovic (University of Colorado Boulder, USA)

#### **Load Modeling Methodologies for Cascading Outage Simulation Considering Power System Stability**

Jiajia Song (Oregon State University, USA); Eduardo Cotilla-Sanchez (Oregon State University, USA); Ted Brekken (OSU, USA)

#### **Smart Grid Distribution Prediction and Control Using Computational Intelligence**

Shawn Chandler (Portland General Electric, USA); Joshua Hughes (Portland State University, USA)

#### **Multi-agent residential demand response based on load forecasting**

Ivana Dusparic (Trinity College Dublin, Ireland); Colin Harris (Trinity College Dublin, Ireland); Andrei Marinescu (Trinity College Dublin, Ireland); Vinny Cahill (Trinity College Dublin, Ireland); Siobhán Clarke (Trinity College Dublin, Ireland)

### **AE2: Alternate Energy II**

#### **Alternate Energy contributed papers II**

Room: Hawthorne/Sellwood

Chairs: Mohamed Osman (Washington State University-Tri-Cities, USA), Quentin Ming (InnovaTek Inc, USA)

#### **DC Arc Flash Calculations for Solar Farms**

Eduardo H. Enrique (Stantec Consulting Ltd., Canada); Peter N Haub (Stantec Consulting Ltd., USA); Timothy Bailey (Stantec Consulting Services Inc, USA)

#### **Wave Energy Converter Modeling in the Time Domain: A Design Guide**

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Bret Bosma (Oregon State University, USA); Ted Brekken (OSU, USA); Tuba Özkan-Haller (Oregon State University, USA); Solomon Yim (Oregon State University, USA)

### **Mobile Elemental Power Plant (MEPP)**

Julanne McCulley (Weber State University, USA)

### **Novel Wireless Performance Monitoring for Small Wind Turbines**

Joshua D Freeman (Amrita University, India); Melvin Sabu (Amrita Vishwa Vidyapeetham University, India); Balakrishnan Shankar (Amrita Vishwa Vidyapeetham, India); Krishnashree Achuthan (Amrita School of Engineering, India)

### **Development of low-profile piezoelectric energy harvester for high load application**

Thorin Purviance (Washington State University Tri-Cities, USA); Spencer Wickler (Washington State University Tri-Cities, USA); Keith Clayson (Washington State University Tri-Cities, USA); Travis Barnes (Washington State University Tri-Cities, USA); Changki Mo (Washington State University Tri-Cities, USA)

## **QL1: Quality of Life I**

### **Quality of Life contributed papers**

Room: Broad/Weidler

Chairs: Guruprasad Madhavan (National Academy of Sciences, USA), James Morris (Portland State University, USA)

### **Server Sky - Computation and Power in Orbit**

Keith Lofstrom (Server Sky & SiidTech, USA)

### **Piezoelectric Sensors for Taxiway Airport Traffic Control System**

Chung Leung (Texas A&M University-Kingsville, USA); Wei-Da Hao (Texas A&M University-Kingsville, USA); Claudio Montiel (Texas A&M University at Kingsville, USA)

### **Effects of Salinity and Feed Temperature on Permeate Flux of an Air Gap Membrane Distillation Unit for Sea Water Desalination**

Ifegwu Eziyi (Florida State University, USA); Anjaneyulu Krothapalli (Florida State University, USA); Julián Ramírez (Florida State University, USA); Juan Ordonez (Florida State University, USA); Jose Vargas (Federal University of Parana, Brazil)

### **Our Environmental Handprint -- The Good We Do**

Jon Biemer (Creating Sustainability, USA); Willow Dixon (Creating Sustainability, USA); Natalia A Blackburn (Blackburn Engineering, USA)

## **SG II: Smart Grid II**

### **Smart Grid contributed papers session II**

Room: Ross Island/Morrison

Chairs: Bob Bass (Portland State University, USA), Annabelle Pratt (Intel Labs, USA)

### **Look-ahead Economic Dispatch of Microgrids with Energy Storage, Using Linear Programming**

## SusTech Contributed Papers Program

Anderson Hoke (University of Colorado Boulder, USA); Alexander Brissette (University of Colorado, USA); Shawn Chandler (Portland General Electric, USA); Annabelle Pratt (Intel Labs, USA); Dragan Maksimovic (University of Colorado Boulder, USA)

### **A Motor-Generator and Supercapacitor Based System for Micro-Grid Frequency Stabilization**

Rick Crispo (Oregon State University & Wallace Energy Systems and Renewables Facility, USA); Ted Brekken (OSU, USA)

### **Optimal Demand Response Bidding and Pricing Mechanism: Application for a Virtual Power Plant**

Ashot Mnatsakanyan (Masdar Institute of Science and Technology, UAE); Scott Kennedy (Masdar Institute of Science and Technology, UAE)

### **Characterizing Energy Usage of Chevrolet Volt Versus Speed**

Dale S.L. Dolan (California Polytechnic State University, USA); Taufik Taufik (California Polytechnic State University, San Luis Obispo, USA); Matthew Ducasse (California Polytechnic State University, USA)

### **The Effect of Demand Side Management on Reliability of Automated Distribution Systems**

Salman Kahrobaee (University of Nebraska-Lincoln, USA); Sohrab Asgarpour (University of Nebraska-Lincoln, USA)

## **AE3: Alternate Energy III**

### **Alternate Energy invited papers**

Room: Ross Island/Morrison

Chairs: Mohamed Osman (Washington State University-Tri-Cities, USA), Quentin Ming (InnovaTek Inc, USA)

### **Modeling and simulation of the microalgae derived hydrogen process in compact photobioreactors**

Jose Vargas (Federal University of Parana, Brazil); David Mitchell (Federal University of Parana, Brazil); Juan Ordonez (Florida State University, USA); Andre Mariano (Federal University of Parana, Brazil); Diego Corrêa (Federal University of Parana, Brazil)

## **QL2: Quality of Life II**

### **Quality of Life invited papers**

Room: Broad/Weidler

Chairs: Guruprasad Madhavan (National Academy of Sciences, USA), James Morris (Portland State University, USA)

### **Novel nanomaterials for water desalination technology**

David Cohen-Tanugi (MIT, USA); Shreya Dave (MIT, USA); Ronan McGovern (MIT, USA); John H Lienhard, V (MIT, USA); Jeffrey Grossman (MIT, USA)

# SusTech Contributed Papers Program

## P1: Poster Session

Room: Multnomah

Chair: James Morris (Portland State University, USA)

### 1. Wind Power Ramping in BPA Area

James Mullen (Washington State University - Tri-Cities, USA); Mohamed Osman (Washington State University-Tri-Cities, USA)

### 2. WSN Based Tracking for a Concentrating Solar Thermal Energy System

Joshua D Freeman (Amrita University, India); Jibin Varghese (Amrita Vishwavidyapeetham, India); Divya Pullarkatt (Amrita Vishwa Vidyapeetham, India)

### 3. Battery Recharging and Testing Swap Stations

Russell Ellis (Portland State University, USA); Caitlin Fackrell (Portland State University, USA); Thatcher Gordon (Portland State University, USA); Phil Lamb (Portland State University, USA); James Morris (Portland State University, USA); Charlie Kawasaki (BETTERY, Inc., USA)

### 4. Communication(s) and Technology in Spectrum Implementation with Body Earth

John Vinson (Bonneville Power Administration Retired, USA)

### 5. Investigating the Effects of 802.11n Interference on Home Area Networks

Daniel Ihlenfeldt (Southern California Edison, USA); Clint Powell (SCE, USA); Afshin Amini (SCE, USA)

### 6. Integrating heterogeneous distributed energy resources to manage intermittent power at low cost

Shahin Abdollahy (University of New Mexico, USA); Olga Lavrova (University of New Mexico, USA); Nicholas Heine (University of New Mexico, USA); Svetlana V. Poroseva (University of New Mexico, USA); Andrea Mammoli (the University of New Mexico, USA)

### 7. Supercapacitor Energy Storage Systems for Voltage and Power Flow Stabilization

Arne Bostrom (OSU, USA); Annette von Jouanne (Oregon State University & School of EECS, USA); Ted Brekken (OSU, USA); Alex Yokochi (OSU, USA)

### 8. Low-cost solar micro-forecasts for PV smoothing

Andrea Mammoli (University of New Mexico, USA); Anthony Menicucci (University of New Mexico, USA); Thomas Caudell (University of New Mexico, USA); Abraham Ellis (Sandia National Laboratories, USA); Steve Willard (Public Service Company of New Mexico, USA); John Simmins (Electric Power Research Institute, USA)

### 9. Low-Cost Cloud-Based Design of Smart Rural Energy Device in Microgrid: Perspective India (An Energy-On-Demand Service for Rural India)

Mukundhan Srinivasan (Alpha College of Engineering & Anna University, India); Vineeth Vijayaraghavan (Panchabuta, India); Sabarigirish Vijayakumar (TCS Pvt Ltd, India); Ramesh Rajesh (The Solarillion Foundation, India)

### 10. Variable Energy Resource Induced Power System Imbalances: A Generalized Assessment Approach

Aramazd Muzhikyan (Masdar Institute, UAE); Amro Farid (Masdar Institute, UAE); Kamal Youcef-Toumi (MIT, USA)

## **SusTech Contributed Papers Program**

### **11. X-View: The Reichmuth Framework II**

Terry Egnor (Energy Resource Management & Energy Resource Management, USA); Howard Reichmuth (Energy Resource Management, USA)

### **12. Study on the Effect of Solar Irradiance Intermittency Mitigation on Electric Vehicle Battery Lifetime**

Alexander Brissette (University of Colorado, USA); Anderson Hoke (University of Colorado Boulder, USA); Joshua Traube (University of Colorado, USA); Fenglong Lu (University of Colorado, USA); Dragan Maksimovic (University of Colorado Boulder, USA)

### **13. Current Total Harmonic Distortion Calculation of Interior Permanent Magnet Synchronous Traction Motors for HEV/BEV Applications**

Leon Jin (Oregon State University, USA)