**Sunday, February 16, 2014**
5:00 – 6:00 PM  
Check-In  
Lobby

**Monday, February 17, 2014**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>7:00 – 8:00 AM</td>
<td>Breakfast and Check-In</td>
<td>Lobby</td>
</tr>
<tr>
<td>8:00 – 8:45 AM</td>
<td><strong>Introductions and Opening Remarks</strong></td>
<td>Barcelona</td>
</tr>
<tr>
<td>8:45 – 8:55 AM</td>
<td>Break</td>
<td>Mezzanine</td>
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</tbody>
</table>
| 8:55 – 12:15 AM | **Group Session 1:**  
Overview of Deployment Environments and Associated Safety Concerns | Barcelona    |
| 12:15 – 1:15 PM | Lunch                                                                   | Barcelona    |
| 1:15 – 3:15 PM | **Breakout Session 1:**  
Deployment Challenges and Safety Needs                                  | Various      |
| 3:15 – 3:45 PM | Break                                                                   | Mezzanine    |
| 3:45 – 5:00 PM | **Group Session 2:**  
Report Out from Breakout Sessions                                        | Barcelona    |
| 6:00 PM | **Reception**                                                           | Lobby        |

**Tuesday, February 18, 2014**

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<td>Barcelona</td>
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| 8:00 – 9:40 AM | **Group Session 3:**  
Current Status of Safety Validation                                      | Barcelona    |
| 9:40 – 10:00 AM | Break                                                                  | Mezzanine    |
| 10:00 – 11:45 AM | **Breakout Session 2:**  
Prioritizing Challenges                                                    | Various      |
| 11:45 – 12:00 PM | Break                                                                  | Mezzanine    |
| 12:00 – 1:15 PM | **Group Session 4:**  
Report Out from Breakout Sessions                                        | Barcelona    |
| 1:15 – 1:30 PM | Closing Remarks                                                        | Barcelona    |
| 1:30 – 2:00 PM | Lunch                                                                   | Mezzanine    |
| 2:00 – 5:30 PM | **Tours of Sandia National Laboratories (Optional)**                    |              |
### Sunday, February 16, 2014

5:00 – 6:00 PM  
Check-In  
Lobby

### Monday, February 17, 2014

7:00 – 8:00 AM  
Breakfast and Check In  
Lobby

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| 8:00 – 8:15   | Illustrating the Importance of Energy Storage Safety  
—Dr. Imre Gyuk, Department of Energy, Office of Electricity | Barcelona  |
| 8:15 – 8:25   | Opening Remarks  
—Andrew Orrell, Sandia National Laboratories | Barcelona  |
| 8:25 – 8:45   | Desired Outcomes for the Workshop  
—Sean J. Hearne, Sandia National Laboratories  
—Vincent Sprenkle, Pacific Northwest National Laboratory | Barcelona  |
| 8:45 – 8:55 AM| Break                                                                                           | Mezzanine  |
| 8:55 – 12:15 PM| **Group Session 1:**  
Overview of Deployment Environments and Associated Safety Concerns | Barcelona  |
| 8:55 – 9:15 | Unique Safety Concerns for Urban ES Deployment  
—Gina Bocra, New York City Department of Buildings | Barcelona  |
—Douglas Danley, NRECA | Barcelona  |
| 9:35 – 9:55 | Overview of the Safety Approaches for the ARRA Notrees Battery Storage Project  
—Ryan Bowles, Duke Energy, ARRA Notrees | Barcelona  |
| 9:55 – 10:15 | Specific Desired Safety Metrics for After-the-Meter ES  
—Neal Bear, FM Global | Barcelona  |
| 10:15 – 10:35 | Safety Needs and Challenges for Fire Department and First Responders  
—Matthew Paiss, San Jose Fire Department | Barcelona  |
<p>| 10:35 – 10:55 AM| Break                                                                                           | Mezzanine  |</p>
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**Group A**

**Group B**
—Discussion Moderator: Babu Chalamala, SunEdison

**Group C**
—Discussion Moderator: Stanley Atcitty, Sandia National Laboratories
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<td>10:00 – 11:45 AM</td>
<td><strong>Breakout Session 2: Prioritizing Challenges</strong>&lt;br&gt;Group D&lt;br&gt;—Discussion Moderator: William Acker, New York Battery and Energy Storage Technology Consortium, Inc.&lt;br&gt;Group E&lt;br&gt;—Discussion Moderator: Babu Chalamala, SunEdison&lt;br&gt;Group F&lt;br&gt;—Discussion Moderator: Stanley Atcitty, Sandia National Laboratories</td>
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<td><strong>Group Session 4: Report Out from Breakout Sessions</strong></td>
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<td>1:15 – 1:30 PM</td>
<td><strong>Closing Remarks</strong>&lt;br&gt;—Dr. Imre Gyuk, DOE Office of Electricity</td>
<td>Barcelona</td>
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<td>1:30 – 2:00 PM</td>
<td>Box Lunch</td>
<td>Mezzanine</td>
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<tr>
<td>2:00 – 6:00 PM</td>
<td><strong>Tours of Sandia National Laboratories (Optional)</strong>&lt;br&gt;—Battery Abuse Test Laboratory (BATLab)&lt;br&gt;—Energy Storage Test Pad (ESTP)&lt;br&gt;—Photovoltaic System Evaluation Laboratory (PSEL)&lt;br&gt;—Distributed Energy Technologies Laboratory (DETL)</td>
<td>Sandia National Laboratories (Prior Reservation Required)</td>
</tr>
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</table>
Discussion Questions

Breakout Session 1: Deployment Challenges and Safety Needs

1. What are unacceptable outcomes?
   - Application differences?

2. What are potential causes of these unacceptable outcomes?
   - Varying application spaces/technologies?

3. What is needed to validate that the unacceptable outcomes will not occur?
   - What is the current status of safety validation techniques?
   - Do those techniques address the outlined need?
   - What needs to be changed or initiated to best address the need?
4. What is needed in regulations to complete these validation techniques?

- What is the current regulatory environment on the both the local and national level?

- What are the current safety metrics used in codes and standards?

- What is needed to ensure that policies are enacted which enable validation techniques?

If you would like to provide feedback outside of the breakout sessions, please send any responses to Amanda Spinney at aspinne@sandia.gov
Discussion Questions

Breakout Session 2: The Optimal Sequence of Critical Activity

1. Who are the players?

2. What actions need to be taken?

3. When do these actions need to be taken?

4. Is the sequence of activity important?

5. Where can stakeholders work collaboratively to accomplish critical activities?

6. Is stakeholder collaboration needed in critical actions? If so, where?

If you would like to provide feedback outside of the breakout sessions, please send any responses to Amanda Spinney at aspinne@sandia.gov
List of Attendees

William P. Acker
New York Battery and Energy Storage Technology Consortium, Inc.

Arun Agarwal
DNV GL

Victor Aguirre
Tucson Electric Power

Abbas Akhil
Sandia National Laboratories

Sarah Allendorf
Sandia National Laboratories

George Andrews
Oak Ridge National Laboratory

Stanley Atcitty
Sandia National Laboratories

Gary Baumgart
Curtiss Wright

Neal Bear
FM Global

Martin Becker
Princeton Power

Gina Bocra
New York City Department of Buildings

Dan Borneo
Sandia National Laboratories

Ryan Bowles
Duke Energy

Babu Chalamala
SunEdison

Marcos Chaos
FM Global

Troy Chatwin
General Electric Company

Dave Conover
Pacific Northwest National Laboratory

Kevin Cook
McKean Defense Group

Douglas Danley
National Rural Electric Cooperative Association

Christopher Darrow
Imergy Power Systems

Daniel Dedrick
Sandia National Laboratories

Daniel Doughty
Battery Safety Consulting, Inc.

Timothy Drew
California Public Utilities Commission

Chad Duffy
National Fire Protection Association

Summer Ferreira
Sandia National Laboratories

Richard Fioravanti
DNV GL

Laurie B. Florence
UL, LLC

Ryan Franks
National Electrical Manufacturers Association

Sham Ganguli
FM Global

Imre Gyuk
Department of Energy–Office of Electricity

Charles Hanley
Sandia National Laboratories

Sean J. Hearne
Sandia National Laboratories

Jeff Hires
GS Battery

Richard Hockney
Beacon Power
Craig Horne
EnerVault

Aminul Huque
Electric Power Research Institute

Haresh Kamath
Electric Power Research Institute

Landis Kannberg
Pacific Northwest National Laboratory

Matthew Lazarewicz
Helix Power

Sang Bok Lee
University of Maryland

Liyu Li
UniEnergy Technologies

Roger Lin
A123 Systems, LLC

Andrew Marshall
Primus Power

Ty McNutt
Arkansas Power Electronic International

Carmine Meola
ACI Technologies, Inc.

Jamie Noland
Aquion Energy

Christopher Orendorff
Sandia National Laboratories

Justin Orkney
Tucson Electric Power

Andrew Orrell
Sandia National Laboratories

Matthew Paiss
San Jose Fire Department

Naum Pinksy
Southern California Edison

David Porter
S&C Electric Company

Christopher Rima
Tucson Electric Power

Larry Rinehart
Rinehart Motion

David Rose
Sandia National Laboratories

Paul Scott
TransPower

Ryan Smith
EPC Power

Matthew Smith
NextEra Energy Resources

Vincent Sprengle
Pacific Northwest National Laboratory

Michael Stosser
Sutherland Asbill & Brennan LLP

John Sullivan
Sandia National Laboratories

William Torre
University of California at San Diego

Russ Weed
UniEnergy Technologies

Colin Wessels
Alveo Energy

Steve Willard
Public Service Company of New Mexico

Kenneth Willette
National Fire Protection Association

John Wiles
New Mexico State University

Robert Wills
Intergrid LLC/Aquion Energy

Tom Wunsch
Sandia National Laboratories
Participating Organizations

A123 Systems, LLC
ACI Technologies, Inc.
Alveo Energy
Arkansas Power Electronic International
Aquion Energy
Battery Safety Consulting, Inc.
Beacon Power
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FM Global
General Electric Company
GS Battery
Helix Power
Imergy Power Systems
McKean Defense
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National Fire Protection Association
National Rural Electric Cooperative Association
New York City Department of Buildings
New York Battery and Energy Storage Technology Consortium, Inc.
New Mexico State University
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Oak Ridge National Laboratory
Public Service Company of New Mexico

Pacific Northwest National Laboratory
Primus Power
Princeton Power
Rinehart Motion
S&G Electric Company
San Jose Fire Department
Sandia National Laboratories
Southern California Edison
SunEdison
Sutherland Asbill & Brennan, LLP
TransPower
Tucson Electric Power
UniEnergy Technologies
University of California at San Diego
Underwriters Laboratory, LLC
University of Maryland
Electrical energy storage is on the cusp of a revolution. New technologies are rapidly being introduced into the market and being deployed, heightening the visibility of energy storage and demonstrating their ability to improve the efficiency and reliability of the electric grid. However, these emerging systems, with varying technology readiness levels, are still in their infancy regarding safety policies, testing, evaluation protocols, and the knowledge of the component and system level impacts to safety. The DOE OE Energy Storage Safety Meeting will address this need by building an actionable strategic roadmap to address the key area of validated energy storage safety, spanning grid-scale, communal, residential and Microgrid deployments for the rapidly increasing array of energy storage technologies.

This meeting is a direct response to the need for validated energy storage safety as identified in the DOE Strategic Plan for Grid Energy Storage. The roadmap that results from this meeting will be a coordinated plan for addressing safety through all levels of development and implementation. Thought leaders in the fields of deployment, operation, regulation, first response, manufacturing, and research and development will identify the challenges and roadblocks for the validation and advancement of safety in energy storage. Through discussions spanning research to grid-level deployment, this meeting will clearly define the current challenges to safety in all main areas of energy storage and provide a clear implementable plan for how to efficiently address these critical issues. This discussion will ultimately result in a DOE OE Energy Storage Safety Roadmap.

This day and a half long meeting will open with speakers from the DOE, regulators, and utilities presenting the current safety needs and challenges of energy storage for grid applications (including technologies deployed on customer premises, but providing grid services). Attendees will break into technology-based and topical focus groups. The objective of these focus groups is to develop a prioritized list of challenges and the research, development, testing, forensic analysis and stakeholder engagement necessary to address those challenges and ultimately enable consumer confidence in these validated safe technologies.

For more information please contact:

Dr. Sean J. Hearne, Sandia National Laboratories
sjhearn@sandia.gov

Dr. Vincent Sprenkle, Pacific Northwest National Laboratory
vincent.sprenkle@pnnl.gov

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.