

National Workshop on Research Directions for
Future Cyber-Physical Energy Systems

Sheraton City Center Hotel
Baltimore, Maryland
June 3-4, 2009

Program Agenda

Wednesday, June 3

- 7:00 A.M. – 8:00 A.M. Continental Breakfast (Liberty A, Lobby Level)
- 7:00 A.M. – 8:00 A.M. Registration (Liberty Foyer, Lobby Level)
- 8:00 A.M. – 8:15 A.M. General Session (Liberty B, Lobby Level)
Opening Remarks, Goals, and Terms of Reference for
Workshop
Marija Ilic, Carnegie Mellon University (CMU) and Workshop Co-Chair
Clas Jacobson, United Technologies Research Center (UTRC) and
Workshop Co-Chair
- 8:15 A.M. – 8:30 A.M. NCO/NITRD Introduction
Chris Greer, National Coordination Office for Networking and
Information Technology R&D (NCO/NITRD)
- 8:30 A.M. – 8:45 A.M. High Confidence Software and Systems Initiatives
Helen Gill, National Science Foundation (NSF)
- 8:45 A.M. – 9:00 A.M. The Challenge of Moving Forward
Marija Ilic (CMU and Workshop Co-Chair)
- 9:00 A.M. – 10:00 A.M. Government Agency Interests
Richard O'Neill, Federal Energy Regulatory Commission (FERC)
Helen Gill (NSF), Dagmar Niebur (NSF)
H. Scott Coombe, Office of Naval Research (ONR)
Al Wavering, National Institute of Standards and Technology (NIST)
- 10:00 A.M. – 10:15 A.M. Break (Liberty Foyer, Lobby Level)
- 10:15 A.M. – 10:45 A.M. Invited Talk: CPS Community View and Synergies with the
Beyond SCADA HCSS Workshop
Speaker: Bruce Krogh (CMU)
- 10:45 A.M. – 11:30 A.M. Keynote: Risk-Limiting Dispatch of the Smart Grid: A Research
Agenda
Keynote Speaker: Pravin Varaiya (University of California-Berkeley)

- 11:30 A.M. – 11:45 A.M.** **Invited Talk: Structural Features of Future Energy Systems ~ Implications on New Modeling, Wide-Area Monitoring, and Control**
Speaker: Ian Hiskens (University of Michigan)
- 11:45 A.M. -- 12:00 P.M.** **Invited Talk: Galvin Electricity Initiative**
Speaker: Mohammad Shahidehpour (Illinois Institute of Technology)
- 12:00 P.M. – 1:00 P.M.** **Working Lunch: Position Paper Madness Session (Liberty A, Lobby Level)**
Moderator: Ron Harley (Georgia Tech)
- 1:00 P.M. – 1:30 P.M.** **Invited Talk: Toward Formal Framework for Designing Energy-CPS: Principles of Future CPSs**
Speaker: Guy AlLee (Intel Corporation)
- 1:30 P.M. – 2:00 P.M.** **Invited Talk: High Efficiency Building Technologies and Demand Control**
Speaker: Phillip Price, Lawrence Berkeley National Laboratory (LBNL)
- 2:00 P.M. – 2:30 P.M.** **Invited Talk: Cyber-Enabled Smart Distribution Systems and Micro Grids**
Speaker: Bruce McMillin (Missouri University of S&T)
- 2:30 P.M. – 3:00 P.M.** **Invited Talk: Towards a Trustworthy Future Power Grid**
Speaker: Rajit Gadh, University of California-Los Angeles (UCLA)
- 3:00 P.M. – 3:15 P.M.** **Instructions for Breakout Sessions**
(Workshop Co-Chairs)
- 3:15 P.M. – 3:30 P.M.** **Break (Liberty Foyer, Lobby Level)**
- 3:30 P.M. - 5:30 P.M.** **Breakout Session I:**
- Group I: Structural Features of Future Energy Systems: Implications on New Modeling and Control Needs (Liberty B, Lobby Level)**
Moderators: Alex Stankovic (Northeastern University) and Alejandro Dominguez-Garcia (UIUC)
- Group II: Toward Formal Framework for Designing Energy-CPS (McKeldin, Cabana Level South)**
Moderators: Frank Mueller, North Carolina State University (NCSU) and Eugenio Schuster (LeHigh University)

3:30 P.M. – 5:30 P.M .

Breakout Session I Continued:

Group III: High Efficiency Building Technologies and Demand Control (Calhoun, Cabana Level South) *Moderators: Baikun Li (University of Connecticut) and Sudip Mazumder (University of Illinois-Chicago)*

Group IV: Cyber-Enabled Smart Distribution Systems and Micro Grids (Schaefer, Cabana Level South) *Moderators: Rajesh Gupta, University of California-San Diego (UCSD) and Jian Sun, Rensselaer Polytechnic Institute (RPI)*

Group V: Towards a Trustworthy Future Power Grid (Preston, Cabana Level South) *Moderators: Serdar Uckun (Palo Alto Research Institute) and Michael D. Lemmon (University of Notre Dame)*

5:30 P.M. – 7:30 P.M.

Working Reception (Liberty A-Lobby Level)

Birds of a Feather: Education and Workforce Challenges for CPS

Education for CPS: *Speaker: Sally L. Wood (NSF)*

Power and Energy Engineering Workforce Collaborative - Outcomes of an NSF/IEEE/PSEERC/NERC Workshop

Speaker: Dagmar Niebur (NSF)

Q&A Session

Moderators: Workshop Co-Chairs

Thursday, June 4

- 7:30 A.M. – 8:30 A.M. Continental Breakfast (Liberty A, Lobby Level)
- 7:30 A.M. – 8:30 A.M. Registration (Liberty Foyer, Lobby Level)
- 8:30 A.M. – 8:45 A.M. General Session (Liberty B, Lobby Level)
Opening Remarks
(Workshop Co-Chairs)
- 8:45 A.M. – 9:15 A.M. Next Generation Future Energy Systems – DOE’s Vision
Henry Kenchington, Department of Energy (DOE)
- 9:15 A.M. – 9:45 A.M. Invited Industry Talk: Reliability in Smart Grids—Challenges and Opportunities
Speaker: Mark Lauby, North American Electric Reliability Corporation (NERC)
- 9:45 A.M. – 10:45 A.M. Industry and Academic Panel: Cyber-Physical Energy Systems Challenges
Coordinator: Karen Miu (Drexel University)
Darrell Massie, Intelligent Power & Energy Research Corporation (IPERC)
Alex Huang (NCSU)
John-Francis Mergen (BBN Technologies)
Steve Leeb (MIT)
Ganesh Kumar Venayagamoorthy (Missouri University of S&T)
Christopher DeMarco (University of Wisconsin)
- 10:45 A.M. – 11:00 A.M. Break (Liberty Foyer, Lobby Level)
- 11:00 A.M. – 12:00 P.M. Report Outs of Breakout Session I Summaries:
- Group I: Structural Features of Future Energy Systems: Implications on New Modeling and Control Needs (Liberty B, Lobby Level)**
Moderators: Alex Stankovic (Northeastern University) and Alejandro Dominguez-Garcia (UIUC)
- Group II: Toward Formal Framework for Designing Energy-CPS (McKeldin, Cabana Level South)**
Moderators: Frank Mueller (NCSU) and Eugenio Schuster (LeHigh University)
- Group III: High Efficiency Building Technologies and Demand Control (Calhoun, Cabana Level South)**
Moderators: Baikun Li (University of Connecticut) and Sudip Mazumder (University of Illinois-Chicago)

- 11:00 A.M. – 12:00 P.M. Report Outs of Breakout Session I Summaries Continued:**
- Group IV: Cyber-Enabled Smart Distribution Systems and MicroGrids (Schaefer, Cabana Level South)**
Moderators: Rajesh Gupta, University of California-San Diego (UCSD) and Jian Sun, Rensselaer Polytechnic Institute (RPI)
- Group V: Towards a Trustworthy Future Power Grid (Preston, Cabana Level South)**
Moderators: Serdar Uckun (Palo Alto Research Institute) and Michael D. Lemmon (University of Notre Dame)
- 12:00 P.M. – 1:00 P.M. Working Lunch: Position Paper Madness Session (Liberty A, Lobby Level)**
Moderator: Michael Caramanis (Boston University)
- 1:00 P.M. – 3:00 P.M. Breakout Session II:**
- Group I: Structural Features of Future Energy Systems: Implications on New Modeling and Control Needs (Liberty B, Lobby Level)**
Moderators: Ali Abur (Northeastern University) and Bruce McMillin (Missouri University of S&T)
- Group II: Toward Formal Framework for Designing Energy-CPS (McKeldin, Cabana Level South)**
Moderators: Sudip Mazumder (UIUC) and Natasha Neogi (UIUC)
- Group III: High Efficiency Building Technologies and Demand Control (Calhoun, Cabana Level South)**
Moderators: Subrahmanyam Venkata (University of Washington) and Karen Miu (Drexel University)
- Group IV: Cyber-Enabled Smart Distribution Systems and Micro Grids (Schaefer, Cabana Level South)**
Moderators: Michael Caramanis (Boston University) and Sirisha Medidi (Boise State University)
- Group V: Towards a Trustworthy Future Power Grid (Preston, Cabana Level South)**
Moderators: Govindarasu Manimaran (Iowa State University) and Fangxing “Fran” Li (University of Tennessee-Knoxville)
- 3:00 P.M. – 3:15 P.M. Break (Liberty Foyer, Lobby Level)**
- 3:15 P.M. – 4:15 P.M. Final Report Outs of Breakout Session Summaries (Liberty B, Lobby Level)**
(Co-Moderators of Breakout Session II)

4:15 P.M. – 4:30 P.M.	Q&A Session
4:30 P.M. – 5:00 P.M.	Next Steps and Closing Remarks <i>Clas Jacobson (UTRC and Workshop Co-Chair)</i>
5:00 P.M.	Workshop Adjourned