Day 1
Monday, May 22, 2017

Session 1: Introduction and Keynote Presentation
Chair: Dr. Michael Brambley
8:15 – 8:30 a.m. Workshop Welcome and Introductions
Dr. Michael Brambley, Pacific Northwest National Laboratory

8:30 – 9:00 a.m. Keynote Presentation: Challenges and Perspectives
Dr. Sonja Glavaski, Advanced Research Projects Agency-Energy (ARPA-E)

Tutorial 1
Chair: Dr. Krishnamurthy Dvijotham
9:00 – 10:00 a.m. Tutorial: The U.S. Electricity Industry in the 21st Century: Challenges and Opportunities
Prof. Dalia Patiño-Echeverri, Nicholas School of the Environment, Duke University

10:00 – 10:30 a.m. Break

Session 2: Industry Perspectives
Chairs: Mr. Paul Ehrlich, Dr. Karanjit Kalsi
10:30 – 11:00 a.m. Hawaii’s Clean Energy Transformation: Future Opportunities and Challenges
Mr. Michael Champley, Former Commissioner, Hawaii Public Utilities Commission

11:00 – 11:30 a.m. Challenges and Opportunities of Applying Optimization and Analytics for Managing Modern Power Systems
Dr. Kwok Cheung, GE Grid Solutions

11:30 a.m. – 1:00 p.m. Lunch Break
Session 2: Industry Perspectives (continued)

Chairs: Mr. Paul Ehrlich, Dr. Karanjit Kalsi

1:00 – 1:30 p.m. To Distribute or to Centralize: Architectures for Control of Power Systems
Dr. Holger Kley, SPIRAE

1:30 – 2:00 p.m. Challenges of Technology Transfer from Research to an Electric Distribution Utility
Ms. Uzma Siddiqi, PE, Seattle City Light

Tutorial 2
Chair: Dr. Krishnamurthy Dvijotham

2:00 – 3:00 p.m. Tutorial: Modeling Frameworks to Enable New Opportunities in Grid Optimization and Control
Prof. Christopher DeMarco, Electrical and Computer Engineering, University of Wisconsin, Madison

3:00 – 3:30 p.m. Break

Session 3: Lightning Talks
Chair: Mr. Thomas Edgar

3:30 – 3:45 p.m. High Level Modeling Language for Developing Co-simulations of Complex Systems
Mr. Thomas Edgar, Pacific Northwest National Laboratory

3:45 – 4:00 p.m. Control System Evaluation Through Large-Scale Complex Interconnected Energy System Simulations
Mr. Jacob Hansen, Pacific Northwest National Laboratory

4:00 – 4:15 p.m. VOLTTRON™ - An Open Source Distributed Control and Sensing Platform for Buildings, the Grid and More
Mr. Jereme Haack, Pacific Northwest National Laboratory

4:15 – 4:30 p.m. Optimal Energy Storage Sizing and Residential Load Scheduling to Improve Reliability in Islanded Operation of Distribution Grids
Mr. Abdulelah Habib, University of California, San Diego
Control of Complex Systems: An Integrated Perspective on Modern Power Grid Control
American Control Conference Workshop
May 22-23, 2017
Sheraton Seattle Hotel, 1400 6th Avenue, Seattle, WA 98101
Redwood B Conference Room

4:30 – 4:45 p.m.  Assessing Demand Flexibility in Uncertain Frequency Responsive Loads
Dr. Soumya Kundu, Pacific Northwest National Laboratory

4:45 – 5:00 p.m.  Transactive Energy Systems Using Double-auction Market: Example and Analysis
Dr. Jianming Lian, Pacific Northwest National Laboratory

5:00 – 5:15 p.m.  Integration of Retail and Wholesale Electricity Markets: Modeling and Stability Analysis
Dr. Thiagarajan Ramachandran, Pacific Northwest National Laboratory

5:15 – 6:00 p.m.  Poster Viewing and Networking Time

6:00 p.m.  Adjourn
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Day 2
Tuesday, May 23, 2017

Introduction
Chair: Dr. Michael Brambley
8:00 – 8:05 a.m. Welcome to Day 2
Dr. Michael Brambley, Pacific Northwest National Laboratory

Session 4: Dynamics and Control
Chairs: Prof. Enrique Mallada, Dr. Soumya Kundu
8:05 – 8:35 a.m. Design, Stability and Control of Ad-hoc Microgrids
Prof. Konstantin Turitsyn, Department of Mechanical Engineering, MIT
8:35 – 9:05 a.m. Performance Tradeoffs of Dynamically Controlled Grid-connected Inverters in Low Inertia Power Systems
Prof. Enrique Mallada, Department of Electrical and Computer Engineering, Johns Hopkins University
9:05 – 9:35 a.m. Realizing Virtual Power Plants
Dr. Changhong Zhao, National Renewable Energy Laboratory
9:35 – 10:05 a.m. Predictive Dispatch and Demand Response for Commercial Buildings
Prof. Colin Jones, École polytechnique fédérale de Lausanne
10:05 – 10:30 a.m. Break
10:30 – 11:00 a.m. UTRC Buildings to Grid Research
Dr. Veronica Adetola, United Technologies Research Center

Tutorial 3: Optimization and Analytics
Chair: Dr. Krishnamurthy Dvijotham
11:00 a.m. – 12:00 p.m. Tutorial: Optimization and Control of Energy Systems
Prof. Pascal Van Hentenryck, Industrial and Operations Engineering, University of Michigan, Ann Arbor
12:00 pm – 1:30 p.m. Lunch Break
**Session 5: Optimization and Analytics**  
Chairs: Prof. Pascal Van Hentenryck, Dr. Draguna Vrabie

1:30 – 2:00 p.m.  
**Optimal Control of Battery Storage Under Cycle-based Degradation Models**  
Prof. Baosen Zhang, Department of Electrical Engineering, University of Washington, Seattle

2:00 – 2:30 p.m.  
**Chance-constrained AC OPF with Probabilistic Guarantees and Scalable Performance**  
Dr. Maria Vrakopoulou, Electrical and Computer Engineering, University of Michigan, Ann Arbor

**Session 6: Economics and Market Design**  
Chairs: Prof. Subhonmesh Bose, Dr. Draguna Vrabie

2:30 – 3:00 p.m.  
**A Self-Reported Baseline Mechanism for Demand Response Programs**  
Dr. Deepan Muthirayan, Department of Electrical and Computer Engineering, Cornell University

3:00 – 3:30 p.m.  
Break

3:30 – 4:00 p.m.  
**Call-options for Wholesale Electricity Markets**  
Prof. Subhonmesh Bose, Electrical and Computer Engineering, University of Illinois, Urbana-Champaign

4:00 – 4:30 p.m.  
**DER Coordination at Large Scales: From Mean-Field Games to Social Welfare Optimization**  
Prof. Wei Zhang, Electrical and Computer Engineering, Ohio State University

**Session 7: Lightning Talks - Control and Optimization Under Uncertainty**  
Chairs: Dr. Draguna Vrabie, Prof. Wei Zhang

4:30 – 4:45 p.m.  
**Model Decomposition Methods for Cyber-Physical Infrastructure Systems**  
Dr. Enoch Yeung, Pacific Northwest National Laboratory

4:45 – 5:00 p.m.  
**Robust Optimization of Infrastructure Systems**  
Dr. Krishnamurthy Dvijotham, Pacific Northwest National Laboratory
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5:00 – 5:15 p.m.          Submodular Optimization for Discovery of Key Entities in Complex Systems
                          Dr. Arun Sathanur, Pacific Northwest National Laboratory

                              Session 8: Workshop Closing

5:15 – 5:30 p.m.          Workshop Closing Remarks
                          Dr. Michael Brambley, Pacific Northwest National Laboratory

5:30 p.m.                  Adjourn

7:00 p.m.                  OPTIONAL: No-host Dinner
                          Wild Ginger
                          1401 3rd Ave, Seattle, WA 98101