

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Increasing Market and Planning Efficiency
through Improved Software

Docket No. AD10-12-006

SUPPLEMENTAL AGENDA NOTICE

(May 5, 2015)

Take notice that Commission staff will convene a technical conference on June 22, 23, and 24, 2015 to discuss opportunities for increasing real-time and day-ahead market efficiency through improved software.

This conference will bring together diverse experts from public utilities, the software industry, government, research centers and academia and is intended to build on the discussions initiated in the previous Commission staff technical conferences on increasing market and planning efficiency through improved software.

The agenda for this conference is attached. If any changes occur, the revised agenda will be posted on the calendar page for this event on the Commission's website¹ prior to the event. The technical conference may be attended by one or more Commissioners.

Kimberly D. Bose,
Secretary.

¹ <http://www.ferc.gov/industries/electric/indus-act/market-planning/2015-conference.asp>.

Monday, June 22, 2015

8:30 AM Introduction (Meeting Room 3M-2)

Richard O'Neill, Federal Energy Regulatory Commission (*Washington, District of Columbia*)

9:00 AM Session M1 (Meeting Room 3M-2)

Computational and Design Needs in RTO Markets: A PJM Perspective

Paul Sotkiewicz, PJM Interconnection, LLC (*Audubon, Pennsylvania*)

Day-Ahead Market Clearing Software Performance Improvement

Yonghong Chen, MISO (*Carmel, Indiana*)

Aaron Casto, MISO (*Carmel, Indiana*)

Xing Wang, Alstom (*Redmond, Washington*)

Jie Wan, Alstom (*Redmond, Washington*)

SPP Security Constrained Unit Commitment Enhancement and Performance Improvement

Jie Wan, Alstom Grid (*Redmond, Washington*)

Gary Cate, SPP (*Little Rock, Arkansas*)

David Gary, Alstom Grid (*Redmond, Washington*)

Xing Wang, Alstom Grid (*Redmond, Washington*)

10:30 AM Break

10:45 AM Session M2 (Meeting Room 3M-2)

Convex Hull Pricing: Rigorous Analysis and Implementation Challenges

Dane Schiro, ISO New England (*Holyoke, Massachusetts*)

Tongxin Zheng, ISO New England (*Holyoke, Massachusetts*)

Feng Zhao, ISO New England (*Holyoke, Massachusetts*)

Eugene Litvinov, ISO New England (*Holyoke, Massachusetts*)

Price Enhancements for Real-Time and Day-Ahead Markets

Congcong Wang, MISO (*Carmel, Indiana*)

Juan Li, MISO (*Carmel, Indiana*)

Dhiman Chatterjee, MISO (*Carmel, Indiana*)

Robert Merring, MISO (*Carmel, Indiana*)

Approaches to Reduce Energy Uplift and PJM Experiences

Ying Xiao, Alstom Grid (*Redmond, Washington*)

Paul Sotkiewicz, PJM Interconnection (*Valley Forge, Pennsylvania*)

12:15 PM Lunch

1:30 PM Session M3 (Meeting Room 3M-2)

NYISO Retrospective Market Simulation Toolkit

Charles Alonge, NYISO (*Rensselaer, New York*)

Tate Hoag, NYISO (*Rensselaer, New York*)

Jiaxiao Hu, NYISO (*Rensselaer, New York*)

Bruce Budris, NYISO (*Rensselaer, New York*)

Muhammad Marwali, NYISO (*Rensselaer, New York*)

MISO Experiences with Congestion Management Enhancement

Li Zhang, MISO (*Carmel, Indiana*)

Kevin Sherd, MISO (*Carmel, Indiana*)

Shu Xu, MISO (*Carmel, Indiana*)

Robert Merring, MISO (*Carmel, Indiana*)

Chuck Hansen, MISO (*Carmel, Indiana*)

A Marginal Equivalent Algorithm and its Application in Coordinated Multi-Area Dispatch Problem

Feng Zhao, ISO New England (*Holyoke, Massachusetts*)

Eugene Litvinov, ISO New England (*Holyoke, Massachusetts*)

3:00 PM Break

3:15 PM Session M4 (Meeting Room 3M-2)

Day-Ahead Window Optimization

Muhammad Marwali, NYISO (*Rensselaer, New York*)

Fred Adadjo, NYISO (*Rensselaer, New York*)

Consider Natural Gas Pipeline Constraints in Electricity Market Operations

Xing Wang, Alstom Grid (*Redmond, Washington*)

Tongxin Zheng, ISO New England (*Holyoke, Massachusetts*)

4:15 PM Break

Monday, June 22, 2015

4:30 PM Session M5 (Meeting Room 3M-2)

Tackle Load and Interchange Uncertainties: PJM's Experiences

Hong Chen, PJM Interconnection, LLC (*Audubon, Pennsylvania*)

Voltage Stability Assessment Implementation in NYISO - Toward a Better Utilization of the Transmission Grid

De Tran, NYISO (*Rensselaer, New York*)

Vladimir Brandwajn, ABB Inc. (*Santa Clara, California*)

5:30 PM Adjourn

Tuesday, June 23, 2015

8:15 AM Arrive and welcome (Meeting Room 3M-2)

8:30 AM Session T1-A (Meeting Room 3M-2)

Stochastic Optimization for Unit Commitment and Electricity Market Operation: A Review

Zhi Zhou, Argonne National Laboratory (*Lemont, Illinois*)

Audun Botterud, Argonne National Laboratory (*Lemont, Illinois*)

Two-Stage Stochastic Unit Commitment Models with Explicit Reliability Requirements through Conditional Value-at-Risk

Andrew Liu, Purdue University (*West Lafayette, Indiana*)

Qipeng Zheng, University of Central Florida (*Orlando, Florida*)

Yuping Huang, University of Central Florida (*Orlando, Florida*)

A Chance-constrained Unit Commitment Model for Power Systems with High Penetration of Renewable Energy

Gabriela Martinez, Cornell University (*Ithaca, New York*)

Lindsay Anderson, Cornell University (*Ithaca, New York*)

Stochastic Unit Commitment at Scale: Cost Savings Analysis for ISO-NE

Jean-Paul Watson, Sandia National Laboratories (*Albuquerque, New Mexico*)

David Woodruff, University of California Davis (*Davis, California*)

Session T1-B (Meeting Room 3M-4)

Near-Global Solutions of Nonlinear Power Optimization Problems: Theory, Numerical Algorithm, and Case Studies

Javad Lavaei, Columbia University (*New York, New York*)

Ramtin Madani, Columbia University (*New York, New York*)

Abdulrahman Kalbat, Columbia University (*New York, New York*)

Morteza Ashraphijuo, Columbia University (*New York, New York*)

Somayeh Sojoudi, New York University (*New York, New York*)

Ross Baldick, University of Texas-Austin (*Austin, Texas*)

A Progressive Method for Electrical System Security Assessment within Large Areas

Manuel Ruiz, Artelys (*Paris, France*)

Jean Maeght, RTE (*Versailles, France*)

Alexandre Marié, Artelys (*Paris, France*)

Othman Moumni Abdou, Artelys (*Paris, France*)

Patrick Panciatici, RTE (*Versailles, France*)

Arnaud Renaud, Artelys (*Paris, France*)

Data-driven Optimization Approaches for Optimal Power Flow with Uncertain Reserves from Load Control

Johanna Mathieu, University of Michigan (*Ann Arbor, Michigan*)

Siqian Shen, University of Michigan (*Ann Arbor, Michigan*)

Yiling Zhang, University of Michigan (*Ann Arbor, Michigan*)

Bowen Li, University of Michigan (*Ann Arbor, Michigan*)

Marginal Loss Iteration Method for LMP Calculation

Brent Eldridge, Federal Energy Regulatory Commission (*Washington, District of Columbia*)

Richard O'Neill, Federal Energy Regulatory Commission (*Washington, District of Columbia*)

Anya Castillo, Federal Energy Regulatory Commission (*Washington, District of Columbia*)

10:30 AM Break

Tuesday, June 23, 2015

10:45 AM Session T2-A (Meeting Room 3M-2)

An Extended Hybrid Markovian and Interval Unit Commitment Considering Renewable Generation Uncertainties

Peter Luh, University of Connecticut (*Storrs, Connecticut*)
 Haipei Fan, University of Connecticut (*Storrs, Connecticut*)
 Khosrow Moslehi, Ventyx, ABB Inc. (*Raleigh, North Carolina*)
 Xiaoming Feng, Ventyx, ABB Inc. (*Raleigh, North Carolina*)
 Mikhail Bragin, University of Connecticut (*Storrs, Connecticut*)
 Yaowen Yu, University of Connecticut (*Storrs, Connecticut*)
 Chien-Ning Yu, Ventyx, ABB Inc. (*Raleigh, North Carolina*)
 Amir Mousavi, Ventyx, ABB Inc. (*Raleigh, North Carolina*)

Impact of ACOPF Constraints on Security-Constrained Unit Commitment

Anya Castillo, Federal Energy Regulatory Commission (*Washington, District of Columbia*)
 Jean-Paul Watson, Sandia National Labs (*Albuquerque, New Mexico*)
 Cesar Silva-Monroy, Sandia National labs (*Albuquerque, New Mexico*)
 Richard O'Neill, Federal Energy Regulatory Commission (*Washington, District of Columbia*)
 Carl Laird, Purdue University (*West Lafayette, Indiana*)

Exact Solutions to Binary Nash Games and an Application to the Power Market Uplift Problem

Daniel Huppmann, Johns Hopkins University (*Washington, District of Columbia*)
 Sauleh Siddiqui, Johns Hopkins University (*Baltimore, Maryland*)

Session T2-B (Meeting Room 3M-4)

Modeling Flexible Primary Response in Security-Constrained Optimal Power Flow

Daniel Kirschen, University of Washington (*Seattle, Washington*)
 Yury Dvorkin, University of Washington (*Seattle, Washington*)
 Pierre Henneaux, Tractebel Engineering (*Brussels, Belgium*)
 Hrvoje Pandzic, University of Zagreb (*Zagreb, Croatia*)

(Im)precision and Inaccuracy in Price and Load Forecasts: Resiliency Implications of Combining Forecast Data with Simulations of n-k Contingencies

Jason Veneman, The MITRE Corporation (*McLean, Virginia*)
 James Thompson, The MITRE Corporation (*McLean, Virginia*)
 Brian Tivnan, The MITRE Corporation (*McLean, Virginia*)

Parallel Solution of a Nonlinear Stochastic Programming Formulation for the N-1 Contingency Constrained ACOPF Problem

Carl Laird, Purdue University (*West Lafayette, Indiana*)
 Anya Castillo, Federal Energy Regulatory Commission (*Washington, District of Columbia*)
 Jean-Paul Watson, Sandia National Laboratories (*Albuquerque, New Mexico*)
 Cesar Silva-Monroy, Sandia National Laboratories (*Albuquerque, New Mexico*)

Tuesday, June 23, 2015

12:15 PM Lunch

1:30 PM Session T3-A (Meeting Room 3M-2)

Using High Performance Computing to Solve Unit Commitment Problem

Feng Pan, Pacific Northwest National Laboratory (*Richland, Washington*)

Stephen Elbert, Pacific Northwest National Laboratory (*Richland, Washington*)

A Distributed Approach to Large Scale Security Constrained Unit Commitment Problem

Kaan Egilmez, Cambridge Energy Solutions (*Cambridge, Massachusetts*)

Decentralized Robust Optimization Algorithms for Tie-Line Scheduling of Multi-Area Grid with Variable Wind Energy

Bo Zeng, University of South Florida (*Tampa, Florida*)

Zhigang Li, Tsinghua University (*Beijing, China*)

Mohammad Shahidehpour, Illinois Institute of Technology (*Chicago, Illinois*)

Wenchuan Wu, Tsinghua University (*Beijing, China*)

Boming Zhang, Tsinghua University (*Beijing, China*)

Session T3-B (Meeting Room 3M-4)

A Corrective Approach to Security Constrained Unit Commitment and Dispatch

Assef Zobian, Cambridge Energy Solutions (*Cambridge, Massachusetts*)

Probabilistic Security-Constrained Unit Commitment with Generation and Transmission Contingencies

Miguel Ortega-Vazquez, University of Washington (*Seattle, Washington*)

Yury Dvorkin, University of Washington (*Seattle, Washington*)

Ricardo Fernandez Blanco Carramolino, University of Washington (*Seattle, Washington*)

Identifying and Controlling Risky Cascading Failures of Transmission Systems

Daniel Bienstock, Columbia University (*New York, New York*)

3:00 PM Break

3:15 PM Session T4-A (Meeting Room 3M-2)

SMART-Invest: A Stochastic, Dynamic Policy Model for Optimizing Investment in Wind, Solar and Storage

Warren Powell, Princeton University (*Princeton, New Jersey*)

Javad Khazaei, Princeton University (*Princeton, New Jersey*)

Large-Scale Stochastic Programming to Cooptimize Networks and Generation in the Face of Long-Run Uncertainties: What Lines Should We Build Now?

Benjamin Hobbs, Johns Hopkins University (*Baltimore, Maryland*)

James McCalley, Iowa State University (*Ames, Iowa*)

Randell Johnson, Energy Exemplar (*Hartford, Connecticut*)

Jonathan Ho, Johns Hopkins University (*Baltimore, Maryland*)

Evangelia Spyrou, Johns Hopkins University (*Baltimore, Maryland*)

Pearl Donohoo, Johns Hopkins University (*Baltimore, Maryland*)

Qingyu Xu, Johns Hopkins University (*Baltimore, Maryland*)

Jasmine Ouyang, Ethree (*San Francisco, California*)

Electricity Market Solutions for Generator Revenue Sufficiency with Increased Variable Generation

Todd Levin, Argonne National Laboratory (*Lemont, Illinois*)

Audun Botterud, Argonne National Laboratory (*Lemont, Illinois*)

A Scalable Solution Framework for Stochastic Transmission and Generation Planning Problems

Francisco Munoz, Sandia National Laboratories and Universidad Adolfo Ibañez (*Albuquerque, New Mexico*)

Jean-Paul Watson, Sandia National Laboratories (*Albuquerque, New Mexico*)

Tuesday, June 23, 2015

Session T4-B (Meeting Room 3M-4)

The Importance of Defining and Formulating Operating Reserve Requirements and Deployments

Erik Ela, EPRI (*Superior, Colorado*)

Eamonn Lannoye, EPRI (*Superior, Colorado*)

Aidan Tuohy, EPRI (*Superior, Colorado*)

Bob Entriiken, EPRI (*Superior, Colorado*)

Russ Philbrick, Polaris Systems Optimization (*Shoreline, Washington*)

Ramping Effect on Forecast Use: Integrated Ramping as a Mitigation Strategy

Clayton Barrows, National Renewable Energy Laboratory (*Golden, Colorado*)

Victor Diakov, National Renewable Energy Laboratory (*Golden, Colorado*)

Greg Brinkman, National Renewable Energy Laboratory (*Golden, Colorado*)

Aaron Bloom, National Renewable Energy Laboratory (*Golden, Colorado*)

Paul Denholm, National Renewable Energy Laboratory (*Golden, Colorado*)

A Study on Wind Dispatchability

Feng Qiu, Argonne National Laboratory (*Lemont, Illinois*)

Jianhui Wang, Argonne National Laboratory (*Lemont, Illinois*)

Look-ahead Scheduling of Energy, Reserves and Ramping Under Uncertainty in a Two-Settlement Framework

Ray Zimmerman, Cornell University (*Ithaca, New York*)

Alberto Lamadrid, Lehigh University (*Bethlehem, Pennsylvania*)

Daniel Munoz-Alvarez, Cornell University (*Ithaca, New York*)

Robert Thomas, Cornell University (*Ithaca, New York*)

5:15 PM Adjourn

Wednesday, June 24, 2015

8:15 AM Arrive and welcome (Meeting Room 3M-2)

8:30 AM Session W1-A (Meeting Room 3M-2)

A Stochastic Dispatchable Pricing Scheme for Electric Energy Day-Ahead Markets

John Birge, University of Chicago (*Chicago, Illinois*)
 Audun Botterud, Argonne National Laboratory (*Argonne, Illinois*)
 Chao Li, Arizona State University (*Tempe, Arizona*)

Standardized Contracts with Swing for the Market-Supported Procurement of Electric Energy and Reserve

Leigh Tesfatsion, Iowa State University (*Ames, Iowa*)
 Deung-Yong Heo, Iowa State University (*Ames, Iowa*)

Preserving Revenue Adequacy in FTR Markets with Changing Topology

Aleksandr Rudkevich, Newton Energy Group LLC (*Boston, Massachusetts*)
 Evgeniy Goldis, Boston University (*Boston, Massachusetts*)
 Michael Caramanis, Boston University (*Boston, Massachusetts*)
 Pablo Ruiz, Boston University (*Boston, Massachusetts*)
 Xiaoguang Li, Boston University (*Boston, Massachusetts*)
 Richard Tabors, Tabors Caramanis Rudkevich (*Boston, Massachusetts*)

Session W1-B (Meeting Room 3M-4)

Ensuring the Operational Security of Power Grids Using the On-Line Dynamic Security Assessment Technology

Lei Wang, Powertech Labs Inc. (*Surrey, British Columbia*)

Grid Architecture as a Means to Understand the Interactions of Power Systems, Markets, and Grid Control Systems

Jeffrey Taft, Pacific Northwest National Laboratory (*Richland, Washington*)

Power Flow Control using Quadrature Boosters with a Suggested Optimal Power Flow Analysis

Sandeep Sadanandan, Tennessee Technological University (*Cookeville, Tennessee*)
 Ghadir Radman, Tennessee Technological University (*Cookeville, Tennessee*)

10:00 AM Break

10:15 AM Session W2-A (Meeting Room 3M-2)

Topology Control Algorithms Impacts in Day-Ahead Markets - Simulations in PJM

Pablo Ruiz, The Brattle Group (*Cambridge, Massachusetts*)
 Michael C. Caramanis, Boston University (*Boston, Massachusetts*)
 Evgeniy Goldis, Newton Energy Group (*Boston, Massachusetts*)
 Bhavana Keshavamurthy, PJM Interconnection (*Valley Forge, Pennsylvania*)
 Xiao Li, Boston University (*Boston, Massachusetts*)
 C. Russ Philbrick, Polaris Systems Optimization (*Shoreline, Washington*)
 Aleksandr Rudkevich, Newton Energy Group (*Boston, Massachusetts*)
 Richard Tabors, Tabors Caramanis Rudkevich (*Boston, Massachusetts*)

Flexible Transmission Decision Support Systems

Kory Hedman, Arizona State University (*Tempe, Arizona*)
 Mostafa Sahraei-Ardakani, Arizona State University (*Tempe, Arizona*)
 Mojdeh Abdi-Khorsand, Arizona State University (*Tempe, Arizona*)
 Xingpeng Li, Arizona State University (*Tempe, Arizona*)
 Pranavamoorthy Balasubramanian, Arizona State University (*Tempe, Arizona*)
 Akshay Korad, Arizona State University (*Tempe, Arizona*)

Co-Optimization of Battery Storage Over Multiple Revenue Streams and Time Scales

Warren Powell, Princeton University (*Princeton, New Jersey*)
 Harvey Cheng, Princeton University (*Princeton, New Jersey*)

Energy Storage: A Study Identifying Business Cases for France by 2030

Guillaume Tarel, Artelys (*Montreal, Canada*)

Wednesday, June 24, 2015

Session W2-B (Meeting Room 3M-4)

A Toolbox for Exploring AC OPF Formulations, Datasets and Solution Methods

Lisa Tang, University of Wisconsin (*Madison, Wisconsin*)

Michael Ferris, University of Wisconsin (*Madison, Wisconsin*)

Christopher DeMarco, University of Wisconsin (*Madison, Wisconsin*)

Byungkwon Park, University of Wisconsin (*Madison, Wisconsin*)

The FLEX DA/RT Co-optimization Model Method - A Better Unit Commitment for an Uncertain Grid

Charles Noble, ACES (*Carmel, Indiana*)

Strong SOCP Relaxations for Optimal Power Flow Problems

Andy Sun, Georgia Institute of Technology (*Atlanta, Georgia*)

Addressing Uncertainty How to Model and Solve Energy Optimization Problems

Alkis Vazacopoulos, Optimization Direct, Inc. (*Harrington Park, New Jersey*)

12:15 PM Adjourn
