



2024 SPRING TECHNICAL WORKSHOP

TUCSON, AZ

MARCH 25 - 28

Monday, March 25, 2024

7:00 – 8:00 a.m.

Registration & Breakfast

Location: Kiva Patio

8:00 a.m. – 12:15 p.m.

Tutorial: Electromagnetic Transient Analysis Simulation Tools

Location: Kiva A

Moderator: Julia Matevosyan, Chief Engineer, ESIG

Introduction & Industry Need

Julia Matevosyan, Chief Engineer, ESIG

Identification of Need for EMT Studies and EMT Study Scope

Lukas Unruh, Lead Studies Engineer, Electranix

Matthew Richwine, Founding Partner, Telos Energy

Data Intake and Organization

Lukas Unruh, Lead Studies Engineer, Electranix

Matthew Richwine, Founding Partner, Telos Energy

System Model Construction and Quality Assurance

Lukas Unruh, Lead Studies Engineer, Electranix

Matthew Richwine, Founding Partner, Telos Energy

10:15 – 10:30 a.m.

Break

Location: Kiva Patio

Simulations

Lukas Unruh, Lead Studies Engineer, Electranix

Analysis and Actions/Mitigations

Lukas Unruh, Lead Studies Engineer, Electranix

Matthew Richwine, Founding Partner, Telos Energy

Available Tools

Mathias Pielahn, EMT Simulation Specialist, PSCAD (Canada)

Jessie Lapsley, System Studies Engineer, PSCAD (Canada)

Anton Stepanov, Research & Development Specialist, EMTP (Canada)

Shijia Li, Director – Team Lead – Power Systems, Opal-RT Technologies (Canada)

Paul Forsyth, VP Marketing & Sales, RTDS Technologies Inc. (Canada)

12:15 – 1:15 p.m.

Lunch

Location: Kiva Patio

1:15 – 2:30 p.m.

Introduction & Keynote Comments

Location: Kiva A

Welcome

Mark Ahlstrom, President, ESIG Board of Directors & NextEra Energy Resources

Keynote: *A New Paradigm for System Control*

Deepak Divan, Professor and Director of Center for Distributed Energy, Georgia Institute of Technology

Industry Overview

Charlie Smith, Executive Director, ESIG

2:30 – 3:00 p.m.

Break

Location: Kiva Patio

3:00 – 5:00 p.m.

Opening Plenary Session: Grid Forming Technology Applications

Location: Kiva A

Chair: **Julia Matevosyan**, Chief Engineer, ESIG

GFM Technology and Project Specifications

Frank Berring, Head of Business Development, Large Scale, SMA America

Are All GFM Controls Created Equal? – Lessons Learned

Lukas Unruh, Lead Studies Engineer, Electranix

GFM BESS Project Development Experience and Future Plans

Amit Barnir, Vice President, US – Network Infrastructure, Zenobē

Integration of GFM Solutions for Compliance on Plant Level

Benjamin Braun, Principal Engineer Power Systems Control, Fluence (Germany)

6:00 – 8:30 p.m.

Board Meeting & Dinner (*only open to ESIG board members*)

Location: Executive Boardroom

Tuesday, March 26, 2024

7:00 – 8:00 a.m.

Registration & Breakfast

Location: Kiva Patio

8:00 – 9:45 a.m.

Session 2: Markets for Transmission

Location: Kiva A

Chair: **Aaron Bloom**, Executive Director Transmission, NextEra Energy

Interprovincial Planning in Canada

Madeleine McPherson, Assistant Professor, University of Victoria (Canada)

Large-scale Transmission Expansion: What's the Prognosis?

Ross Baldick, Professor, University of Texas at Austin

Regional Transmission Planning Reforms

Matthew Christiansen, General Counsel, FERC

Regulatory Options for Improvement of Interregional Transmission Investment Signals

Joshua Macey, Assistant Professor, University of Chicago

9:45 – 10:15 a.m.

Break

Location: Kiva Patio

10:15 a.m. – 12:00 p.m.

Session 3a: Transmission Expansion Studies

Location: Kiva A

Chair: **Juliet Homer**, Senior Energy Research Engineer/Analyst, PNNL

Context, Resource Adequacy and HOT Paths

David Palchak, Manager and Research Engineer, NREL

Economic Analysis: Benefit-cost of Portfolios and Regional Insights

Amy Rose, Energy Analyst, NREL

Zonal-to-nodal: National Transmission Plans and Production Cost Modeling

Jarrad Wright, Senior Researcher, NREL

System Security: AC Power Flow

Nader Samaan, Chief Engineer and Team Lead (Grid Analytics), Electricity Security Group, PNNL

10:15 a.m. – 12:00 p.m.

Session 3b: Grid Forming Technology Developments

Location: Kiva B

Chair: **Jason MacDowell**, Chief Systems Integration Officer, ESIG & GE Energy Consulting

BESS Applications – Project Examples, Grid Forming, and Augmentation

Prashant Kansal, Sr. Staff Power Systems Engineer, Tesla

Beyond Inertia Capabilities for Grid of the Future

Sam Maleki, Senior Principal Power Systems Engineer, Electric Power Engineers

Stabilize High-IBR Power Systems with Grid-Forming Inverters

Shuan Dong, Researcher, NREL

GFM Inverter Hardware Testing

Shahil Shah, Principal Engineer, NREL

12:00 – 12:20 p.m.

Annual Meeting

Location: Kiva A

12:00 – 1:15 p.m.

Lunch

Location: Kiva Patio

1:15 – 3:00 p.m.

Session 4A: Resilience

Location: Kiva A

Chair: **Josh Novacheck**, Transmission Planning Engineer, NextEra Energy Resources

Operational Impacts of Extreme Weather Events

Stephen George, Director, Operational Performance, Training & Integration, ISO New England

Extreme Events and Transmission Analysis in Probabilistic Modeling

Megan Pamperin, Strategic Assessments Engineer, MISO

Resilience and Transmission Task Force

Ryan Deyoe, Power Markets Specialist, Telos Energy

Forward Looking Extreme Weather Datasets

Casey Burleyson, Scientist, PNNL

1:15 – 3:00 p.m.

Session 4b: Virtual Power Plants

Location: Kiva B

Chair: **Obadiah Bartholomy**, Manager, Distributed Energy Strategy, SMUD

VPP - Planning and Operating a Utility Asset

Angela Long, CEO, Rockcress Consulting

Cost and Value of VPPs

Ryan Hledik, Principal, The Brattle Group

VPP Participation Models: What is the Objective?

Elaine Hale, Senior Research Engineer, NREL

3:00 – 3:30 p.m.

Break

Location: Kiva Patio

3:30 – 5:30 p.m.

Session 5a: Transmission Interconnection Process

Location: Kiva A

Chair: **Julia Matevosyan**, Chief Engineer, ESIG

GFM Battery Application for Weak Grid Conditions in the Chilean Power System

Anton Stepanov, Research & Development Specialist, EMTP (Canada)

Grid Interconnection Process – Lessons from Australia

Jarman Stephens, Co-founder, gridmo (Australia)

i2X Transmission Roadmap

Cynthia Bothwell, Technology Manager/Grid Integration Engineer, Boston Government Services, contractor to US Dept. of Energy

Near-term Solutions to New Generator Interconnection
Sarah Toth, Senior Associate, Rocky Mountain Institute

IBR Interconnection Requirements, Latest Developments
Julia Matevosyan, Chief Engineer, ESIG

3:30 – 5:30 p.m.

Session 5b: Resource Adequacy

Location: Kiva B

Chair: **Bethany Frew**, Group Manager, Capacity Expansion & Electricity Markets Group, NREL

RA Metrics and Criteria

Derek Stenclik, Founding Partner, Telos Energy / ESIG RA Task Force Lead

A Comparison of Three Different Reserve Margin Methods in the Context of an Island System
Arne Olson, Senior Partner, Energy and Environmental Economics, Inc.

Evolution of Probabilistic Modeling and Need for Revised Risk Metrics for Resource Adequacy
Durgesh Manjure, Sr. Director, Resource Adequacy Planning, MISO

A Probabilistic Approach to Resource Adequacy Assessment

Anaisha Jaykumar, Reliability Engineer, SERC Reliability Corporation

European Resource Adequacy Assessment (ERAA) 2023 – Methodology and Results

Ralph Pfeiffer, Asset Management – Head of National and European Grid Planning Processes, Amprion GmbH (Germany)

Marlene Petz, System Development – Team Lead System Adequacy, Austrian Power Grid AG (Austria)

6:30 – 8:00 p.m.

Annual Awards/Networking Reception

Location: Ventana Heights Terrace

Wednesday, March 27, 2024

7:00 – 8:00 a.m.

Breakfast

Location: Kiva Patio

8:00 – 9:45 a.m.

Session 6: Price-based Demand Flexibility

Location: Kiva A

Chair: **Lisa Schwartz**, Sr. Policy Researcher and Strategic Advisor, LBNL

Price-based Demand Response as a Resource in System Planning

Juan Pablo Carvallo, Research Scientist, LBNL

Price-Based Demand Flexibility

Jason Klotz, Sr. Manager Distribution Resource Planning, Strategy & Engagement, Portland General Electric

Valley Clean Energy and PG&E Dynamic Rate Pilots
Mitch Sears, Executive Officer, Valley Clean Energy
Robert Kasman, Dynamic Rates Product Manager, PG&E

9:45 – 10:15 a.m.

Break

Location: Kiva Patio

10:15 a.m. – 12:00 p.m.

Session 7a: System Planning

Location: Kiva A

Chair: **Leah Kaffine**, Director, Fundamentals, Pattern Energy Group

Integrated System Planning Process at Xcel Energy

Steve Martz, Vice President, Integrated Planning, Xcel Energy

ERCOT Reliability, Economic and Resiliency Planning

Prabu Gnanam, Director, Grid Planning, ERCOT

How Do the Answers Change if You Study 100% Clean Energy vs 100% Clean Electricity?

Jeremy Hargreaves, Principal, Evolved Energy Research

Decoupling the Value of Energy Storage

Carlo Brancucci, Co-founder & CEO, encoord

10:15 a.m. – 12:00 p.m.

Session 7b: DER

Location: Kiva B

Chair: **Bryan Palmintier**, Manager: Transmission and Distribution Interactions Group, NREL

Integrated System Planning with a DER Perspective

Greg Adams, Technical Executive Consultant, EPRI

Harnessing the Power of Consumer Flexibility

Tom Breare, Global Head of Partnerships, Kraken (United Kingdom)

Dynamic Operating Envelopes

Brad Smith, Smart Energy Lead, GRIDSIGHT (Australia)

Analyzing the Reliability of Distributed PV Plus Storage

Juan Pablo Carvallo, Research Scientist, LBNL

12:00 – 1:15 p.m.

Lunch

Location: Kiva Patio

1:15 – 3:15 p.m.

Session 8a: System Oscillations

Location: Kiva A

Chair: **Mark O'Malley**, Leverhulme Professor of Power Systems, Imperial College London

A System Oscillation Reference Guide

Nick Miller, Principal, HickoryLedge

System Oscillation History in the GB System
Xiaoyao Zhou, Operability Policy Manager, Networks, National Grid ESO (UK)

Managing System Oscillations in the ERCOT System
Yunzi Cheng, Manager, Operations Stability Analysis, ERCOT

Analysis of Oscillations in AEMO's West Murray Zone
Shahil Shah, Principal Engineer, NREL

Damping System Oscillations with IBR Controls
Vahan Gevorgian, Chief Engineer, NREL

1:15 – 3:15 p.m.

Session 8b: EV Impacts on Electrification

Location: Kiva B

Chair: **Sean Morash**, Principal, Telos Energy

ESIG Grid Planning for Vehicle Electrification Task Force Report
Sean Morash, Principal, Telos Energy

Applications of AI to Managing EV Charging Loads
Mike Ting, Sr. Product Manager, Itron

Utility Planning for Distribution-Optimized Electric Vehicle Charging
Kyle Garton, Head of Product, WeaveGrid

Revolutionizing Grid Dynamics: Distributed AI for Electric Vehicles
YC Zhang, Vice President of Product Solutions, Utilidata

Turning EV Load into a Flexible System Resource
Nick Morelli, Expert Strategic Analyst, Pacific Gas & Electric

3:15 – 3:45 p.m.

Break

Location: Kiva Patio

3:45 – 5:45 p.m.

Closing Plenary Session: Plant Retirement Planning – A Panel Discussion

Location: Kiva A

Chair: **Paul Sotkiewicz**, President & Founder, E-Cubed Policy Associates

Framing the Discussion
Paul Sotkiewicz, President & Founder, E-Cubed Policy Associates

Solution: Keeping a Gas Plant Without Running It
Matt Schuerger, Senior Fellow, ESIG

Solution: Reliability Standards
Mark Olson, Manager, Reliability Assessments, NERC

Solution: Transmission Buildout and RMR Contracts
David Lapp, Maryland Office of People's Counsel

Solution: Storage
Paul Denholm, Sr. Energy Analyst, NREL

Solution: Demand Flexibility
Debbie Lew, Associate Director, ESIG

5:45 – 5:50 pm
Closing Comments
Charlie Smith, Executive Director, ESIG

Thursday, March 28, 2024

8:00 – 9:00 a.m.
Breakfast
Location: Kiva Patio

9:00 a.m. – 4:00 p.m.
Working Group Sessions

[\(Click here to download the full Working Group Sessions Schedule\)](#)