

Electromagnetic Transient (EMT) Strategic Workshop



WECC

Day 1—November 19, 2025

Time (MT)	Topic	Presenters
8:00 a.m.	Continental Breakfast and Check-in	
8:30 a.m.	Opening Keynote Inventing the Future of EMT Modeling and Studies in the West	Branden Sudduth, WECC
8:45 a.m.	Workshop Kickoff and Background Workshop Goals, Objectives, and Background	Ryan Quint, Elevate
9:00 a.m.	Panel 1: EMT Drivers, Needs, and the IBR Business Case The Importance of EMT Modeling and Industry Experience Building EMT Expertise EMT Modeling and IEEE 2800-Series Interconnection Standards Overview of NERC Project 2022-04 EMT Modeling and Project 2020-06 Model Verification and Validation	Julia Matevosyan, ESIG Andy Hoke, NREL Mike Marz, ATC
10:15 a.m.	Break	
10:30 a.m.	Panel 2: EMT Modeling Requirements SRP Experience Building EMT Modeling Requirements and Gathering EMT Models from Developers EMT Models and Studies in CAISO PacifiCorp EMT Modeling Requirements	Bo Gong, SRP Ebrahim Rahimi, CAISO Rikin Shah, PAC
Noon	Lunch	



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1:00 p.m.	Panel 3: EMT Model Quality Checks and Testing—Pt. 1 Electronix Model Requirements: History and Philosophy EMT Model Quality Checks and Testing Requirements and Recommended Practices in IEEE 2800-2022 and IEEE P2800.2	Anuradha Kariyawasam, E-TRAN Julia Matevosyan, ESIG
1:45 p.m.	Break	
2:00 p.m.	Panel 3: EMT Model Quality Checks and Testing—Pt. 2 Walkthrough of IBR Model Quality Testing IBR Plant Model Development and Updates EMT Model Development: IBR Plant Owner's Perspective	Kasun Samarasekera, Elevate Katie Iversen, AES Rishi Maharaj, Engie
3:15 p.m.	Group Discussion: Prioritization, Lessons Learned, Harmonization Opportunities	Vic Howell, WECC (moderator)
4:00 p.m.	Adjourn	
5:00 p.m.	Networking Opportunity at HallPass	(Voluntary)





YOU'RE INVITED

HallPass @ the Gateway

Wednesday, November 19, 5:00 p.m.

53 S Rio Grande Street
Salt Lake City, UT 84101
(Voluntary Dinner)



Join your fellow workshop attendees at HallPass at the Gateway, just a short walk from the WECC office. Utah's first food hall features a fully stocked bar and a variety of fast-casual dining options, from bao buns to lobster rolls. *Participants are responsible for their own meal costs.*

Anchored by Las Vegas' SkinnyFATS, HallPass offers communal dining in a beautifully designed space with local art and an outdoor patio. Enjoy a range of delicious options, including BBQ, Greek, seafood, and desserts. Highlights include the HOG & Tradition BBQ fries, lamb and feta gyro, and creative dishes like the Cherry Popper Hamburger and "BLOT" sandwich.



WELCOME TO SALT LAKE CITY



Day 2—November 20, 2025

Time (MT)	Topic	Presenters
8:00 a.m.	Continental Breakfast	
8:30 a.m.	Day 1 Recap	Enoch Davies, WECC
9:00 a.m.	Panel 4: EMT Screening Approaches: Where and When is EMT Needed? (Presentations + Discussion) Harmonized EMT screening and understanding what neighbor PCs are doing Early experience with EMT screening at PGE PG&E EMT Study Screen Approach SDG&E Screening Approach and Studies	Ben Hutchins, WPP Ian Beil, PGE Sophie Xu, PG&E Hassan Baklou, SDG&E
10:15 a.m.	Break	
10:30 a.m.	Panel 5: EMT System Studies: Experience, Tools, and Practices (Presentations + Discussion) ERCOT Large-Scale PSCAD Simulations EMT Modeling and Studies Experience at Idaho Power ATC EMT Study Experience with IBRs, Data Centers, etc. From Vision to Reality: Ontario's Path to EMT Adoption	Scott Zuloaga, Moinul Islam, ERCOT Andrés Valdepeña Delgado, IPC Mike Marz, ATC Mohamed ElNozahy, IESO
12:15 p.m.	Lunch	
1:15 p.m.	Input and Feedback Session—Roadmap for the Future (Open Discussion) Feedback and Learnings from Panel Sessions WECC's Role in Helping the West Advance EMT Modeling and Studies—Industry Feedback	Ryan Quint, Elevate Vic Howell, WECC
3:00 p.m.	Adjourn	





Branden Sudduth

Vice President of Reliability Planning
and Performance Analysis, WECC

Keynote Message

Branden Sudduth, Vice President of Reliability Planning and Performance Analysis at WECC, leads the organization's technical and analytical functions, overseeing Reliability Modeling and Assessments, Standards Development, Performance Analysis, Event Analysis, and Situation Awareness.

As Director of Reliability Risk Management, Branden led the strategic direction for WECC's Performance Analysis and Event Analysis / Situation Awareness departments. He actively supported industry stakeholders through the Operating and Market Interface Committees, ensuring alignment and collaboration. Additionally, with a strong foundation in engineering and management roles within WECC's Reliability Planning department, Branden brings deep expertise in bulk power system modeling and analysis, driving impactful results for the organization.

Branden holds a bachelor's degree in electrical engineering from Brigham Young University, a master's in electrical engineering from the University of Idaho, and an MBA from Weber State University.

Ian Beil

Manager of Transmission Planning, Portland General Electric (PGE)



Dr. Ian Beil is an electrical power system engineer, researcher, and instructor. Ian leads the Transmission Planning team at Portland General Electric, which studies a host of long-term transmission system phenomena. He has held previous industry positions involving transportation electrification and energy storage projects, renewable energy integration studies, and electromagnetic transient analysis. He also serves as an adjunct faculty member at Portland State University's Maseeh College of Engineering.

Enoch Davies

Manager of Reliability Modeling, WECC



Enoch began his career at WECC in 2005 after graduating from the University of Utah with a BSEE. While at WECC, Enoch has earned an MSEE from the University of Idaho and become a professional engineer in the state of Utah. Enoch is currently the Manager of Reliability Modeling. He is focused on the reliability and security of the Western Interconnection, and is involved in many industry groups.

Mohamed ElNozahy

Engineering Manager for EMT Studies, Ontario Electricity System Operator (IESO)



Dr. Mohamed ElNozahy is the Engineering Manager for Electromagnetic Transient (EMT) Studies at Ontario's Independent Electricity System Operator (IESO), where he leads the development and deployment of Ontario's large-scale EMT model. With over 19 years of experience in power systems engineering, Mohamed specializes in renewable integration and dynamic stability analysis. He holds a doctorate in Electrical Engineering from the University of Waterloo, is a licensed Professional Engineer (P.Eng.) in Ontario, and a certified Project Management Professional (PMP). He is a senior member of the IEEE and a recipient of Electricity Canada's 2025 Faces of the Industry award.



Hassan Ghoudjehbklou

Principal Engineer, San Diego Gas & Electric (SDG&E)

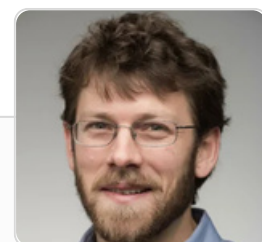
Hassan Ghoudjehbklou is a Principal Engineer in the Transmission Planning and Generator Interconnection group at SDG&E and also an IEEE Senior Life Member. He previously held technical leadership roles at GE-Harris and OSI and taught at Isfahan University of Technology, with visiting appointments at Ontario Hydro, the University of Toronto, and the University of Calgary. He holds a doctorate and two master's degrees from Georgia Tech. His expertise includes power system modeling, stability, reliability, renewable integration, and microgrids. He has also taught power systems courses at UC San Diego and San Diego State University, and is active in IEEE, CIGRE, and the Professional Engineers of California, with current interests in AI applications for grid planning and operations.



Bo Gong

Executive Engineer, Salt River Project (SRP)

Bo Gong is a transmission planner and SRP's executive engineer. He leads efforts to develop SRP's long term transmission expansion strategy in coping with IBR integration, large load integration, generation resource development and acquisition, and new planning technologies and tool adoption. He received his doctorate from the University of Wisconsin-Madison.



Andy Hoke

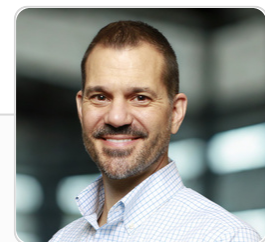
Principal Engineer, National Renewable Energy Laboratory (NREL)

Andy Hoke is a principal engineer in the Power Systems Engineering Center at NREL, where he has worked for 15 years. He received his doctorate and master's degrees from the University of Colorado. His expertise is in grid integration of power electronics and inverter-based renewable and distributed energy. His work includes power systems modeling and simulation, advanced inverter controls design, hardware-in-the-loop testing and model development, and standards development. He has served as chair of IEEE 1547.1-2020, IEEE P2800.2, and is a registered professional engineer in the State of Colorado.



Vic Howell

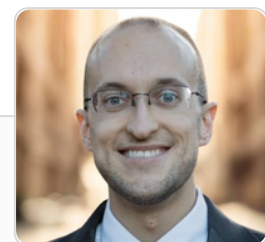
Director of Reliability Assessments and Modeling, WECC



Vic has over 30 years of experience in the electric utility industry and serves as Director of Reliability Assessments and Modeling at WECC. Before joining WECC in early 2020, Vic served in engineering management roles at Peak Reliability, the former Reliability Coordinator for the Western Interconnection. Vic was instrumental in developing Peak's operations policies, methodologies, and procedures aimed at improving reliability in the Western Interconnection for the operations horizon. Prior to joining Peak in 2011, Vic worked in various operations engineering roles at Duke Energy Carolinas and PECO Energy. Vic holds a Master of Science in electrical engineering from New Mexico State University's Electric Utility Management Program and a Bachelor of Science in electrical engineering from North Carolina State University. Vic is a registered Professional Engineer in North Carolina.

Ben Hutchins

Principal Engineer, Western Power Pool (WPP)



Ben Hutchins is a principal engineer with the WPP Transmission Planning team. He has over 10 years of experience in Transmission Planning, including utility and consulting experience. He has worked with utilities on the West Coast, the East Coast, and abroad while living in London. He has experience with EMT modeling in PowerFactory and PSCAD, and he has experience comparing and tuning IBR EMT models to match their generic positive sequence counterparts.

Moinul Islam

Senior Planning Engineer, Electric Reliability Council of Texas (ERCOT)



Md Moinul Islam is a Senior Planning Engineer in the Dynamic Studies Department, specializing in power system dynamics and reliability analysis. He earned his master's (2011) and doctorate (2014) in power and energy systems from the University of South Carolina. Following his doctorate, he served as an adjunct faculty member and postdoctoral fellow at the University of South Carolina until January 2019.

Katie Iversen

Senior Manager of Generation Modeling and Power System Studies, AES



Katie Iversen is Senior Manager of Generator Modeling and Power System Studies at AES, leading a team responsible for modeling renewable energy plants and performing interconnection, as-built, and operational power system studies. She began her career at WECC, where her work on the Canyon 2 Fire and Angeles Forest disturbances sparked a passion for renewables. Since joining AES (formerly sPower) in 2019, she has managed modeling and compliance for a fleet of over 8.6 GW across 63 operational NERC-registered projects and 51 GW in development. Katie holds an MSEE and an MBA from the University of Utah and served as vice chair of NERC Project 2020-06 until 2024.

Anuradha Kariyawasam

Lead Engineer, Electranix Corporation (E-TRAN)



Anuradha Kariyawasam is a Lead Engineer at Electranix with over a decade of experience in power system studies. Before joining Electranix in 2020, he worked as a study engineer at Manitoba Hydro International since 2012. He specializes in studies and consulting support for power systems with a focus on renewable energy.

Rishi Maharaj

Engineering Manager, Engie



Rishi Maharaj is an electrical engineer in the Operations Engineering department at ENGIE North America. His work includes resolving all types of problems that arise after wind, solar, and battery energy storage plants become operational. He lives and works in Powell River, Canada and is a licensed professional engineer in British Columbia and Ontario.



Mike Marz

Principal Engineer, American Transmission Company (ATC)



Michael Marz is a Principal Engineer in ATC's System Planning Group. Prior to joining ATC in 2001, he spent 12 years with Cooper Power Systems (now Eaton) and five years with Minnesota Power. In addition to performing power flow, dynamic stability, and transient analysis, he has an extensive background in power quality and overvoltage protection. Mr. Marz is also the vice chair of NERC Project 2022-04 EMT Modeling. He has a BSEE from Notre Dame, an MSEE from Purdue, and an MBA from the University of Minnesota. He is a Senior Member of IEEE and a PE in Minnesota and Wisconsin.

Julia Matevosyan

Associate Director and Chief Engineer, Energy Systems Integration Group (ESIG)



Julia Matevosyan is Associate Director and Chief Engineer at ESIG. She has more than 25 years of experience in the power industry focusing on integration of IBRs and, more recently, large loads. Prior to joining ESIG, Matevosyan was the Lead Planning Engineer at ERCOT. In her time with ERCOT, she worked on adequacy of frequency control, performance issues related to high penetration levels of IBRs and ancillary services market design. Julia received her bachelor's from Riga Technical University in Latvia, and her master's and doctorate from the Royal Institute of Technology (KTH) in Sweden.

Ryan Quint

President and CEO, Elevate Energy Consulting



Ryan Quint is the President and CEO of Elevate Energy Consulting and the President and Chief Engineer of GridStrong. Prior to launching Elevate and GridStrong, Ryan was the Director of Engineering at NERC where he led strategic initiatives on emerging reliability risk mitigations. Ryan has experience at BPA and Dominion Energy with a background in transmission planning and grid dynamics. He received his doctorate from Virginia Tech, is a registered Professional Engineer, and was the recipient of the 2024 IEEE Power and Energy Society Outstanding Young Engineer of the Year Award.

Ebrahim Rahimi

Senior Advisor, California Independent System Operator (CAISO)



Ebrahim Rahimi is a Senior Advisor in the Transmission Planning team at CAISO, where he has worked for the past 10 years on bulk transmission planning and studies, including IBR integration, EMT modeling and studies, HVDC transmission, and, more recently, large load interconnection. Prior to joining CAISO, Ebrahim spent 10 years with the AESO and Teshmont Consultants in system planning and studies. He received his doctorate from the University of Manitoba—where understanding EMT isn't just encouraged, it's practically mandatory!

Kasun Samarasekera

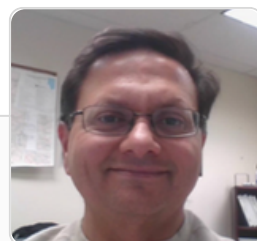
Head of Power System Studies and Modeling, Elevate Energy Consulting



Kasun Samarasekera is the Head of Power System Studies and Modeling at Elevate Energy Consulting and has deep expertise in renewable interconnection processes, model quality testing, controls tuning, model benchmarking, and other areas. He played a key role in developing one of the world's largest dynamic equivalent AC systems on a 20-rack RTDS system. Kasun is proficient in PSCAD, RTDS/RSCAD, PSS®E, TARA, and DSATools. He is passionate about streamlining processes through Python automation for efficient and accurate project delivery.

Rikin Shah

Director of Area Transmission Planning and Development, PacifiCorp (PAC)



Rikin Shah is Director of Area Transmission Planning and Development at PacifiCorp, where he has led PacifiCorp's planning team since 2013, overseeing studies for generator interconnections, transmission service requests, and NERC/FERC compliance. His group supports major projects like Gateway South and the upcoming Limber–Terminal project enabling new solar generation in southern Utah. Mr. Shah is focused on challenges of large-scale IBR integration and EMT studies to understand their operational impacts. Mr. Shah has over 21 years of experience, with prior roles at NorthWestern Energy.

Andrés Valdepeña Delgado

System Consulting Engineer, Idaho Power Company (IPC)



Andrés Valdepeña Delgado joined Idaho Power in 2014, and currently works as a System Consulting Engineer in the planning department where he assists with resource, system, and distribution planning. Andrés holds a BSEE degree from the Durango Institute of Technology, and an MSEE and doctorate in electrical and computer engineering from Boise State University. Andrés is an adjunct professor at Boise State University where he teaches power-related courses. In his spare time, Andrés enjoys traveling, tending to his garden, swimming, and playing board games.

Sophie Xu

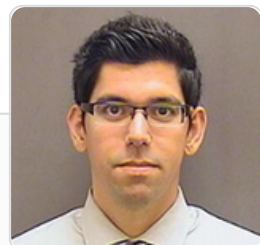
Senior Advising Engineer, Pacific Gas & Electric (PG&E)



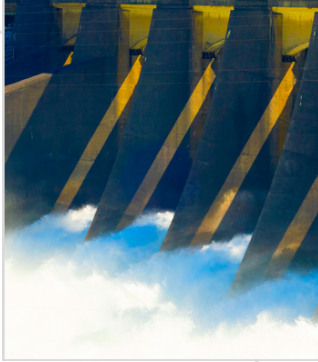
Sophie Xu is a Senior Advising Engineer with PG&E Transmission Planning. She has two decades of experience in power system analysis, identifying and solving high IBR related issues, and developing new methodology and tools to support bulk power system reliability and the integration of IBRs.

Scott Zuloaga

Planning Engineer, Electric Reliability Council of Texas (ERCOT)



Scott Zuloaga received a BSEE degree from Arizona State University (ASU) in 2015 and completed his doctorate in electrical engineering at ASU in 2020. He has been with the Dynamic Studies Department within the ERCOT Grid Planning group since April 2020.



Thank You



We would like to express our appreciation for all the presenters, panelists, and participants who participated in the EMT Strategic Workshop. Thank you for generously volunteering your time and expertise, and sharing your perspectives with the industry. We are proud to feature a diverse group of experts who provide invaluable insights and perspectives. Thank you for your dedication and commitment to enhancing our understanding and ensuring the reliability of the bulk power grid.

We want
your feedback



EMT Workshop Survey

[HTTPS://WWW.SURVEYMONKEY.COM/R/KPLP9Z7](https://www.surveymonkey.com/r/KPLP9Z7)

TAKE THE
SURVEY



