Dr. Sherif Abdelwahed is an Associate Professor in the Electrical and Computer Engineering

Department at Mississippi State University where he teaches and conducts research in the area of computer engineering, with specific interests in cyber-security, self-managing systems, power system management, model-integrated computing and formal verification. He received his Ph.D in 2002 from the Department of Electrical and Computer Engineering at the University of Toronto. Prior to joining Mississippi State University, he was a research assistant professor at the Department of Electrical Engineering and Computer Science and senior research scientist at the Institute for Software Integrated Systems, Vanderbilt University, from 2001-2007. From 2000-2001 he worked as a research scientist with the system diagnosis group at the Rockwell Scientific Company. He established the first NSF I/UCRC center at Mississippi State University, the Center for Autonomic Computing (CAC). He is currently the co-director of this center. He is also serving as the associate director of the Distributed Analytics and Security Institute (DASI) at MSU. Dr. Abdelwahed has more than 110 publications and is a senior member of the IEEE.

Mark Adamiak, **IEEE Fellow** – is the Chief Application Architect for GE Grid Automation and is

responsible for identifying, developing, and integrating new technology for GE's substation protection, control, and automation business. Mark received his Bachelor of Science and Master of Engineering degrees from Cornell University in Electrical Engineering and an MS-EE degree from the Polytechnic Institute of New York. Mark started his career in the utility business with American Electric Power (AEP) and in mid-career, joined General Electric where his activities have ranged from advanced development, product planning, application engineering, and system integration. Mr. Adamiak is a member of the IEC61850 WG, a Fellow of the IEEE, a registered Professional Engineer in the State of Ohio and a GE Edison award winner. In 2012, Mr. Adamiak was elected to the US National Academy of Engineering.

Antonio Alvarez is the Renewable Integration Manager at PG&E. Mr. Alvarez is responsible for

understanding the cost, reliability, and environmental impacts of increasing levels of intermittent renewable generation. He leads PG&E's efforts to develop an integrated resource plan for PG&E with increasing amounts of renewable and distributed energy resources and that achieves significant reductions in GHG emission, is reliable and affordable to customers. Mr. Alvarez earned a Bachelor of Science degree in Civil Engineering from the Universidad Javeriana in Colombia, a Master degree in Engineering Management from Stanford University, and a Master degree in Business Administration from the Haas School of Business at the University of California, Berkeley. Mr. Alvarez has been with PG&E since 1977.

Rahul Anilkumar received M.S and B.S degrees in electrical power engineering from Washington

State University and Visvesvaray Technololgical University respectively. He has five years of active research and industry experience in the fields of transmission and distribution network planning, renewable integration and algorithm development.

He is currently at Quanta Technology, as a Senior Engineer, working with transmission and distribution system planning, and Synchrophasor R & D. He has completed multiple internships in the field of data center design, automation and power quality, prior to joining Quanta. His research and interests include

Transmission and Distribution network planning and operations, system stability and control, application of optimization algorithms to power system operations, model development and application of synchrophasor technology to power systems.

He is also a reviewer of IEEE transactions on industry automation and control and Industry applications.

Dr. Galina S. Antonova is with ABB Power System Automation and Communication Group in North America. She has over 20 years of experience in the area of electrical engineering, data communications and time synchronization, which she mainly applied to the power industry. In her current roles with ABB, Galina is applying her communication expertise to substation automation and protective relay applications. Galina received her M. Sc. degree (1993) and a Ph.D. (1997) in Electrical Engineering and Data Communications from the State University of Telecommunications, St. Petersburg, Russia, and spent one year at University of British Columbia (UBC) on a scholarship from the Russian President. She is actively involved with IEEE PSRC and is a Canadian member of the IEC TC57 WG10 and CIGRE SC D2.

Dr. Alexander Apostolov, **IEEE Fellow** – received MS degree in Electrical Engineering, MS in Applied Mathematics and Ph.D. from the Technical University in Sofia, Bulgaria. He has 40 years of experience in power systems protection, automation, control and communications. He is presently Principal Engineer for OMICRON electronics in Los Angeles, CA.

He is an IEEE Fellow and Member of the Power Systems Relaying Committee and Substations C0 Subcommittee. He is a past Chairman of the Relay Communications Subcommittee, serves on many IEEE PES Working Groups and is Chairman of Working Groups C2 “Role of Protective Relaying in Smart Grid”. He is a member of IEC TC57 working groups 10, 17, 18 and 19. He is a Distinguished Member of CIGRE (International Council on Large Electric Systems) and Convenor of CIGRE WG B5.53 ”Test Strategy for Protection, Automation and Control (PAC) functions in a full digital substation based on IEC 61850 applications” and member of several other CIGRE B5 working groups. He holds four patents and has authored and presented more than 470 technical papers.

He is an IEEE Distinguished Lecturer and Adjunct Professor at the Department of Electrical Engineering, Cape Peninsula University of Technology, Cape Town, South Africa. He is an Editor-in-Chief of PAC World.

Karen Austin is Senior Vice President, Information Technology, and Chief Information Officer for Pacific Gas and Electric Company. Her area of focus is information technology, where she is leading the evaluation of every aspect of the group’s business, including the support of current mission-critical systems and developing the company’s technology strategy, infrastructure and architecture. Prior to this role, Austin held several executive-level positions at Kmart Corporation and Sears Holdings Corporation. While at both companies, she was responsible for systems governing store operations, merchandising, supply chain and finance. At Kmart, she served as Divisional Vice President, Supply Chain Applications, Vice President IT Applications, and Vice President for Applications Development, Chief Information Officer and Interim Chief Marketing Officer. At Sears, Austin served as Senior Vice President and Chief Information Officer and most recently as President of Consumer Electronics. She has also held various information technology positions for The Timken Company and for Central Mutual Insurance Company in Ohio. Austin holds a Bachelor’s Degree in Computer Science from Tri-State University in Angola, Indiana.

Dr. Juan de Bedout is the Chief Technology Officer for GE's Energy Management business, leading a team of 5,000 engineers in over 20 countries around the world. Energy Management is GE's electrification and automation business, a $7.6BB division serving a diverse array of customer segments including electric power transmission and distribution, renewable energy, oil and gas exploration and production, metals, mining, marine electric propulsion, commercial buildings and data centers, among others. The business has a complete portfolio of products and service offerings, including generators, primary equipment for high voltage utility applications, turnkey electrical substations, distribution automation products, circuit breakers and switchgear, variable speed motor drives, electrical motors, and a thorough suite of utility and industrial automation products. Under Juan's leadership, the engineering team is responsible for designing and producing world-class products and solutions for the Energy Management businesses.

Prior to this role, Juan served as the Technology Director for the Electrical Technologies & Systems organization at GE Global Research, reporting to the Senior Vice President of GE Global Research. In this role, he led a global team of approximately 550 scientists and engineers, responsible for advanced technology development in the areas of semiconductor devices and packaging, electronics, electrical power conversion, controls and signal processing, in support of GE's Energy, Oil & Gas, Aviation, Transportation and Healthcare businesses.

Juan obtained all of his degrees from Purdue, starting with a B.S.M.E degree in 1994, followed by an M.S.M.E. degree in 1996, and finishing with a Ph.D. in mechanical engineering in 2000.

Joe Betro –PG&E

Tom Bleier is CTO of QuakeFinder, Inc. For thirty-seven years Tom Bleier has developed, built, and tested complex defense and commercial satellites and ground control systems. Late in his career Tom became interested in understanding the physics of the pre-earthquake process. He developed ultra-low frequency (ULF) magnetometers to detect the electromagnetic signals at the onset of large earthquakes that may provide the key to understanding the warning signs of deadly seismic hazards. What started as an educational outreach program, donating time and materials for the ULF magnetometer kits to a handful of high-schools, soon obtained technology funding from the State of California for expansion into a web-based network of over thirty high-school sensors that detected and recorded ULF background signals—looking for earthquakes.

In 2000 Tom co-founded QuakeFinder as the humanitarian research and development division of Stellar Solutions, a leading aerospace engineering services provider in Palo Alto, California. QuakeFinder was formed to conduct seismic research with the ultimate goal of saving lives by developing an early warning system of potentially destructive earthquakes, much like the existing hurricane or tornado warnings. Several distinctive patterns of magnetic pulses and air conductivity changes have been seen prior to 5-6 earthquakes greater than magnitude 5. Maintaining the largest network in the world, QuakeFinder currently has over 165 three axis induction magnetometer instruments along with positive and negative air ion detectors installed to systematically collect and analyze these signals, and to compare them to normal background signals at each site. QuakeFinder has partnered or received sponsorship from NASA, industry and foundations all working towards the same quest of continuing the work, based on sound scientific theory and practice, to create a system for short term (days to weeks) forecasting of major earthquakes.

Robert W. Cummings is NERC Senior Director of Engineering and Reliability Initiatives. Mr. Cummings joined NERC in 1996 and has extensive experience in the industry in system planning, operations engineering, and wide area planning. He holds a Bachelor of Science Degree in Power System Engineering from Worcester Polytechnic Institute and is an IEEE Senior Member.

His geographically diverse experience includes Central Vermont Public Service Corporation in System Planning (generation and transmission), Public Service Company of New Mexico, and the East Central Area Reliability Coordination Agreement (ECAR).

Mr. Cummings was the "father" of power interchange transaction "tagging" and the Interchange Distribution Calculator, which shows loading contributions on key system transmission interfaces, or "flowgates," for the Eastern Interconnection.

He was a principal investigator of the 2003 northeast blackout and the September 8, 2011 Pacific Southwest Disturbance, leading event analysis teams in the sequence of events development, modeling and studies (powerflow and dynamics analysis), and transmission/generation performance areas. He directed the NERC Event Analysis program for five years.

Mr. Cummings is the senior staff technical advisor for the NERC System Analysis and Modeling and the System Protection and Controls Subcommittees, and is the technical advocate in the North American Synchro-Phasor Initiative. He is also the technical director of the NERC System Protection Improvement Initiative, the Modeling Improvements Initiative, and the Frequency Response Initiative.

Kevin Clifford is a Senior Meteorologist with PG&E. His primary focus is on the wide-array of weather-related impacts on renewable generation including distributed solar generation and variability, utility-side wind and solar generation and forecast accuracy, and precipitation forecasting for small-hydro. Kevin also provides support in many other utility-meteorology data analytics including load forecasting, weather-related outage prediction, numerical weather modeling.

Kevin has a B.S. in Environmental Sciences from Boston College, and a Masters in Meteorology and Climate Studies from San Jose State University, with focus on WRF-Model Performance for Wind Power Forecast in the Coast Ranges of Central California. Kevin's hobbies include golf, snowboarding, woodworking, and brewing.

Jeff Dagle has worked at the Pacific Northwest National Laboratory, operated by Battelle for the U.S. Department of Energy (DOE), since 1989. During that time has had led numerous projects in the areas of transmission reliability and security. Recent project highlights include leading the North American SynchroPhasor Initiative (NASPI), serving on the leadership team of the DOE Grid Modernization Laboratory Consortium, co-leader for the PNNL Future Power Grid Initiative from 2010 to 2015, and led the team providing cyber security reviews for the DOE Smart Grid Investment Grants and Smart Grid Demonstration Projects associated with the American Recovery and Reinvestment Act of 2009. Other career accomplishments include leading the data requests and management task for the U.S.-Canada Power System Outage Task Force investigation of the August 14, 2003 blackout, supporting the DOE Infrastructure Security and Energy Restoration Division with on-site assessments in New Orleans following Hurricane Katrina in 2005, and serving as a member of the National Infrastructure Advisory Council (NIAC) study group that was formed in 2010 to

establish critical infrastructure resilience goals. In 2014 Mr. Dagle was invited to serve on a National Academy committee to provide recommendations for the analytical research foundations for the next generation electric grid. He is a Senior Member of the IEEE and a member of National Society of Professional Engineers (NSPE). He received the 2001 Tri-City Engineer of the Year award by the Washington Society of Professional Engineers, and is a registered professional engineer in the State of Washington. He is the recipient of several patents, a Federal Laboratory Consortium (FLC) Award in 2007, and an R&D 100 Award in 2008 for the Grid Friendly™ Appliance Controller technology. He received B.S. and M.S. degrees in Electrical Engineering from Washington State University in 1989 and 1994, respectively.

Dr. Ratan Das is the founder of icaPower, which serves customers in power system protection, automation and control. Ratan is the chair of the IEEE PSRC WG K15 on Centralized Substation Protection and Control.

Ratan received his B.E.E. (Hons.) degree from Jadavpur University, Kolkata, India, and M.Sc. and Ph.D. degrees in Electrical Engineering from the University of Saskatchewan, Canada. He has worked in power system protection, automation and control for 29 years: with NTPC Ltd., India, for 11 years, and with ABB Inc., USA, for 18 years. Ratan holds four patents and has contributed to over 30 publications.

Rustom Dessai is the lead engineer for PG&E's Volt/VAR Optimization Pilot program within the Emerging Grid Technologies organization. He joined PG&E as a Power Quality Engineer in 2007, and moved to his present role in 2013. The Emerging Grid Technologies team is focused on evaluating new distribution automation technologies with proven ability to deliver utility operational and customer benefits. Rustom is a licensed Professional Electrical Engineer in the state of California and received a BS in Electrical Engineering and Computer Science from the University of California, Berkeley.

Bill Dickerson is Chairman of the Board of Arbiter Systems, Inc. in Paso Robles, California. Bill received his BSEE from Washington University in St. Louis in 1975 and his Masters in Business Administration from the University of Michigan in 1979.

Bill worked at Hewlett-Packard Company in Palo Alto, California and Spokane, Washington from 1979 until 1986, when he and his current partners acquired Arbiter Systems, Inc. Bill is the original product designer for Arbiter's GPS timing product line and the Model 1133A Power Sentinel, the industry's most accurate Phasor Measurement Unit (PMU).

Mr. Dickerson is a member of the IEEE Power Systems Relaying Committee and Chairs multiple working groups working on Time tagging and timing Profile in Protection and Disturbance Recording of Intelligent Electronic Devices.

Dr. Vaibhav Donde is a Senior Advising Electrical Engineer at PG&E's Smart Grid Applications. He is involved in PG&E's Smart Grid pilots and leading the laboratory testing of Fault Detection and Location technologies for distribution networks. Prior to joining PG&E in 2013, he was a Principal Scientist at ABB Corporate Research Center in Raleigh, NC during 2006-2013, where he was involved in R&D activities focusing on algorithms for power Transmission and Distribution system management. He was a research fellow at Lawrence Berkeley National Laboratory during 2005-2006 and has earned M.S. and Ph.D. degrees in

Electrical Engineering from the University of Illinois at Urbana-Champaign in 2000 and 2004 respectively. His technical interests, current and past work include operation, modeling and simulation, optimization and monitoring of power T&D systems, smart-grid applications, HVDC grids, dynamics and nonlinear control, and High Performance Computing.

Dr. Xinzhou Dong is a Professor in the Department of Electrical Engineering at Tsinghua University.

He is IET Fellow, IEEE Senior Member, and Senior Member of Chinese Society for Electrical Engineering (CSEE), Trustee of China Electro-technical Society(CES).

He received his bachelor's degree in 1983, his master's degree in 1991 and a Ph.D. degree in 1996 from the Department of Electrical Engineering, Xi'an Jiaotong University, China. He furthered his post-doctoral research at the Electrical Engineering Station of Tianjin University from 1997 to 1998. Since February 1999, He has been employed by Tsinghua University, China. At present, he serves as a professor of Tsinghua University, and the director of Tsinghua-ALSTOM Grid Research Center. His research interests include protective relaying, fault location and application of wavelet transforms in power systems. He is author or co-author of more than 200 journal papers.

Davis Erwin received his BSEE and MSEE in 1997 and 1998 respectively from New Mexico State University. Davis is a registered professional engineer in California and has been with PG&E system protection since 1999 supporting 500 kV Protection and PG&E Remedial Action Schemes. He participated as a NERC Standard Drafting Team member for the NERC RAS definition and RAS Protection and Control standard (PRC-012-2). He also serves as a member of the WECC RASRS.

Photo

Tony Faris – BPA

Thomas Field received a BSEE from UNO in 1988 and an MSEE in power from LSU in 1993. He worked for Nashville Electric Service in protection and communications design until 1998. He worked until 1999 as the principal engineer of the Real Time Simulator Lab in the ComEd Technical Labs for testing of relays. He worked until 2004 for Southern Company where he performed EMTP simulations on various components and phenomena. He worked until 2007 for Western Area Power Administration in a transmission planning group and he started the Southwest Area Transmission Short Circuit Working Group. He is currently working for Entergy in Transmission Design Basis where he is responsible for the real time simulator lab and university research. He is a member of several IEEE working groups: the IEEE PES, IEEE SA, and IEEE IAS.

Photo

Gerald FitzPatrick - NIST

Jeff Foley - Siemens RuggedCom

Dr. Yong Fu is an Associate Professor in the Department of Electrical and Computer Engineering at

Mississippi State University (MSU). He has been awarded the Tennessee Valley Authority (TVA) Endowed Professorship in Power Systems Engineering. He received his B.S. and M.S. degrees in Electrical Engineering from Shanghai Jiao Tong University, China, in 1997 and 2002, respectively. In 2006, he received his Ph.D. degree in Electrical Engineering from Illinois Institute of Technology, Chicago. From 2006-2009, he was a senior research associate at the Robert W. Galvin Center for Electricity Innovation at Illinois Institute of Technology, Chicago. He joined the Department of Electrical and Computer Engineering at Mississippi State University as an Assistant Professor in Fall 2009.

He has over 15 years of research experience in the area of power system operation and control, and has published over 40 IEEE Transactions journal papers. He serves as a PI or co-PI on several projects including Smart Grid, Electric Ship Research, Micro-CHP, and Synchrophasor.

He was a recipient of the NSF Faculty Early Career Development (CAREER) Award in 2012. He serves as an editor for the IEEE Transactions on Power Systems, the IEEE Power Engineering Letters, the IEEE Access, the Journal of Electric Power Components and Systems, and the CSEE Journal of Power and Energy Systems. He was a Guest Editor of the IEEE Transactions on Smart Grid: Special Issue on "Optimization Methods and Algorithms Applied to Smart Grid". He is an IEEE senior member.

Peter Fung –PG&E

Dr. Alireza Ghassemian is a detailed from FERC to Office of Electricity Delivery & Energy Reliability

at DOE. He is currently managing the Advance Grid Modeling Research (AGMR) Program at DOE. Ali came to DOE from Office of Electric Reliability at FERC where he worked on a variety of regulatory and reliability assignments. Prior to joining the Commission he worked in the Advanced Application Group of Siemens Energy Management. In that position he worked on all aspect of Energy Management System from project delivery, training, and support to Research and Development on new base applications. Ali received a Bachelor of Science in Electrical Engineering from University of Maryland at College Park and a Master of Science and a Ph.D. in Electrical Engineering with a concentration in Power System from Virginia Tech. His areas of interest includes Power system operation and planning; reliability analysis; state estimation; dynamic stability analysis and control.

Dr. Jay Giri, **IEEE Fellow** – is Director of Power Systems Technology and Strategic Initiatives at GE

Grid Software Solutions in Redmond, Washington, USA. He leads a team of engineers who deliver software applications to utility control centers for: electricity market systems, generation monitoring and control and synchrophasor/phasor measurement unit (PMU) analytics. He is a liaison for university research activities and an affiliate professor at the University of Washington. Jay and 11 other engineers co-founded Energy System Computer Applications (ESCA) in 1978. After numerous corporate mergers, ESCA became part of GE Grid Software Solutions in 2015. Jay designed and implemented the original software for the ESCA automatic generation control (AGC) and dispatcher training simulator (DTS) power system simulation functions. Today this AGC controls over 50% of North American generation as well as generation in many other countries, and the DTS is one of the predominant simulators used by control centers worldwide. He has a PhD from Clarkson University in New York and a B.Tech from the

Indian Institute of Technology (IIT), Madras. He was elected IEEE Fellow: “For contributions to the design and implementation of power system control centers” in 2002. Since 2011, Jay has been a member of the IEEE Power & Energy Society (PES) Governing Board – focussing on Industry Outreach. Jay was appointed Alstom Grid Senior Fellow in 2013 and a member of the Washington State Academy of Sciences in 2015.

Russ Griffith - (PG&E)

John Grosh is the Deputy Associate Director in the Computation Directorate at Lawrence Livermore National Laboratory (LLNL), responsible for the development of new research programs in advanced computing for national and energy security. In addition, he is the lab lead for electric grid research and serves as the team leader for planning and design tools under the DOE Grid Modernization Laboratory Consortium. Previously, he led research in computer science, computational mathematics and science as the Director for the Center for Applied Scientific Computing.

Prior to joining LLNL in 2006, Mr. Grosh worked in the Department of Defense for twenty years in various research and development leadership roles, including high performance computing, modeling and simulation, and cyber security. In 2003-2004, he led a multi-agency task force for the White House Office of Science and Technology Policy that developed the Federal plan for research, deployment, and employment in high-end computing. In addition to his technology roles, he developed DOD and US government export control policy for computers and microprocessors.

Gene Henneberg – NV Energy

Scott Higgins is Director of Utility T&D Distributed Energy and Microgrids, Schneider Electric - Energy. Scott has over 20 years of experience in Utility Industry focused on electric T&D network modeling and IT/OT solutions delivery with an extensive background in GIS, OMS, Advanced DMS and DSCADA software applications used by distribution utilities for distribution substation and feeder operations. Scott has also led the U.S. Energy Utilities team for Schneider Electric, with a focus on developing end-to-end grid automation solutions that span software, intelligent devices, communication networks and electrical equipment to meet the needs in the Utility marketspace. Today, Scott represents Schneider’s utility automation and control systems competency as well as our distributed energy and Microgrid competency to Utilities in North America.

Hamody Hindi is an electrical engineer in Bonneville Power Administration’s Transmission Planning department. He is also an active member of the WECC Model and Validation Work Group in the area of dynamic load modeling. Hamody joined BPA in 2009 after completing his M.S.E.E. at University of Washington, Seattle. He is a registered Professional Engineer in the state of Washington.

Patrick M. Hogan is senior vice president of Electric Transmission & Distribution at Pacific Gas and Electric Company. Hogan oversees PG&E's electric transmission and distribution system, which delivers safe and reliable energy to more than 16 million customers throughout Northern and Central California. Prior to his promotion to senior vice president of Electric Transmission & Distribution in 2016, Hogan served as vice president of Electric Strategy & Asset Management where he oversaw the company's electric transmission and distribution assets. Hogan also led the development and deployment of technology into PG&E's electric system. Before joining PG&E in 2013, Hogan held leadership and officer roles in transmission, distribution, operations, engineering and asset management at British Columbia Hydro, National Grid, and KeySpan. Hogan holds a bachelor's and master's degree in Electrical Engineering from Manhattan College and a master's degree in Business Administration from Hofstra University.

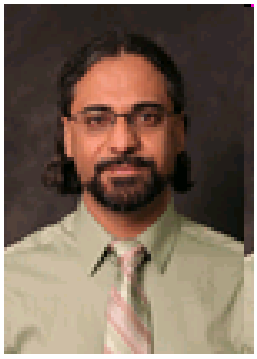
Shawn Holder is a Principal Risk Analyst for Electric Operations Asset Management. He is responsible for leading risk assessments and control adequacy assessments across Electric Operations. Shawn's responsibilities include working with Electric Operations clients to develop, implement, and monitor appropriate risk mitigation activities and controls. Shawn's prior role at PG&E was Senior Protection Engineer where he was responsible for supporting protection related project work as well as clearances and real-time operations. Prior to joining PG&E in 2008, Shawn worked as a Research Engineer at Schweitzer Engineering Laboratories and Electrical Engineer at Avista Utilities. He has a Bachelor's and Master's Degree in Electrical Engineering from University of Idaho holds a certificate in Decision and Risk Management from Stanford and is a registered Professional Engineer in the state of California.

Dr. Anil Jampala received his Ph. D. from University of Washington, Seattle and joined ESCA Corporation in 1986, which is currently part of GE Grid Solutions. He worked on several major US and international projects. He currently works on WAMS and EMS applications. Anil also has a MBA from Seattle University. He is a Senior Member of IEEE and received its Millennium Medal in 2000. Anil is a registered Professional Engineer in the state of Washington. He also has a PMP certification from Project Management Institute.

Mike Jensen – PG&E

Terry Jones is a computer scientist at Oak Ridge National Laboratory. Terry received his BS in Physics from Southwestern Oklahoma State University, and MS in Computer Science from Stanford University. Terry's work has included the design and development of software protocols for very low time uncertainty among distributed systems. As a member of the IEEE Precision Time Protocol specification, Terry helps define standards that impact a diverse set of industries including telephony, large-scale scientific machines, and the internet of things. A member of the IEEE and ACM, his interests lie in middleware, runtime systems, parallel scaling efficiencies, and taking complex algorithms and mapping them onto ultra-scale systems.

Dr. Masoud Karimi is an associate professor with the Department of Electrical and Computer Engineering at the Mississippi State University. He obtained his PhD degree from University of Toronto in 2004. His research interests focus on control aspects pertaining to the integration of distributed and renewable energy systems into the utility grid at high penetration level. He has also conducted research on several other topics such as power quality conditioning systems, estimation of power system parameters, and power system stability and control.



Dr. Farid Katiraei is senior director of Renewable Integration and Microgrids for Quanta Technology. He has more than 14 years of professional experience in the areas of distributed generation interconnection and protection, power electronics and modeling and analysis of system transients and dynamics. In the recent years, Farid has been the technical leads for design, development and testing of several pilot projects for utilities in North America involving renewable technologies, advanced distribution automation, energy storage and microgrids.

Farid has received his PhD from university of Toronto. He is a Senior Member of IEEE, Steering committee chair of the international microgrid symposium, and active participants in several technical working groups and standards development task forces within IEEE, IEC and CIGRE.

Gordon Kawaley – BPA

Dr. Roger King, **IEEE Fellow** – is Executive Director of the Institute for Computational Research in Science and Engineering (ICRES), a William L. Giles Distinguished professor, and holds the CAVS Endowed Chair in Engineering.

King received his BS in electrical engineering from West Virginia University in 1973, a MS in electrical engineering from the University of Pittsburgh in 1977, and a doctorate from the University of Wales in the United Kingdom in 1988.

As the Executive Director of ICRES, King leads an organization that strives to be a world-class center of excellence for research, technology and education equipped to address engineering challenges facing the nation's industrial base. Utilizing high performance computational resources and state-of-the-art analytical tools for modeling, simulation, and experimentation, ICRES will provide a distinctive, interdisciplinary environment that will support economic development and outreach activities throughout the State of Mississippi and beyond. The Institute is composed of three MSU research/economic development centers - Center for Advanced Vehicular Systems (CAVS) in Starkville MS; Center for Advanced Vehicular Systems Extension (CAVS-E) in Canton, MS; and the Institute for Systems Engineering Research (ISER) in Vicksburg, MS.

Dmitry Kosterev – BPA

Gregg L. Lemler is vice president of Transmission Operations for Pacific Gas and Electric Company.

He is responsible for operating the electric transmission grid, a system consisting of over 18,600 miles of electric transmission line (60kV to 500kV) and 960 transmission and distribution substations throughout Northern and Central California. His current responsibilities include providing leadership and strategic direction for all transmission operations of the company, including related engineering, design, and construction activity. Lemler also oversees the company's Critical Infrastructure Protection program, ensuring that PG&E is in full compliance with FERC and NERC standards.

Throughout his 30+ year career with PG&E, Lemler has served in various senior level management positions supporting the company's engineering, planning, maintenance, construction and project management at the transmission and distribution levels, along with overseeing many of the company's hydroelectric power plants.

Lemler's industry association activities include designation as PG&E's member representative for the WECC, Peak Reliability Coordinator (Peak RC), and the North American Transmission Forum (NATF). He is an elected Class 1 representative on the WECC Member Advisory Committee and board member of WIRES–a nonprofit trade association formed in 2005 to promote investment in the North American electric transmission system.

Lemler is a registered engineer in the state of California and received his bachelor's degree in Mechanical Engineering from the University of Wisconsin, Madison. He also received his MBA from California State University, Fresno and is a graduate of the executive business administration and management program at the Tuck School of Business at Dartmouth College.

Michael Lewis is Manager of the Substation Test department at Pacific Gas and Electric. He is responsible for managing the portfolio PG&E electric generation interconnection, transmission and distribution field testing and internal requirements compliance with NERC/WECC/CAISO/CPUC. His department also supports over 100 field employees in the maintenance and construction of protection equipment.

Mr. Lewis has over 43 years of experience in protection/control design, testing, and commissioning of electrical facilities which involves a wide range of substations, generation, transmission, and distribution inclusive of voltages from 4-500kV. Generation facilities include nuclear, steam, hydro, gas, photovoltaic, and windfarms.

Mr. Lewis is an active member of the North American Transmission Forum.

Doug Macdonald has recently moved to a new role as General Manager North America Sales and Customer Support for Software Solutions which is part of GE Grid Solutions.

Prior to the recent GE acquisition of Alstom Power, Macdonald joined Alstom Grid on March 25th, 2013 as the North American Unit Managing Director. Previously he had a seven year career with Vestas American Wind Technology where he held various roles including Senior Vice President, Canada, Senior Vice President of Government Relations and Senior Vice President of Customer Service, responsible for developing and leading the service and maintenance operations for the United States and Canada

Macdonald's earlier career included 17 years at Otis Elevator, a division of United Technology, as a leader and manager focused on operations, sales, construction, maintenance and finance. His broad business perspective and understanding of the Canadian and U.S. business environments allows him to bring strong leadership and vision to his current role.

Macdonald earned a bachelor of arts from the University of Western Ontario in London and received an MBA from McMaster University in Hamilton, Ontario.

Current Board memberships include the Renewable and Sustainable Energy Institute (RASEI), collaboration between the University of Colorado and NREL.

Previous board memberships include the Oregon Business Association, Burlington Chamber of Commerce-political action committee; the Conservation Halton Board of Directors, participating as Chair of Governance Committee, the CAO Evaluation Committee, Resource Planning Committee; and Etobicoke General Hospital Foundation Board Member.

Dr. Vahid Madani, **IEEE Fellow** – is a technology leader for advanced power systems applications at Pacific Gas & Electric Co., headquartered in San Francisco, California, USA. His most recent assignments are associated with grid modernization, reactive compensation, advanced control technology, wide-area advanced warning systems, and deployment of emerging technology. He is the recipient of the PG&E's "Wall of Fame Award" for innovative solutions to restore power to two completely destroyed EHV (Extremely High Voltage) transmission Substations immediately following the 1989 Loma Prieta (San Francisco and Silicon Valley) earthquake, and a WECC Regional Reliability Council recognized first respondent to restore interconnected power grid following the 1994 Northridge (Los Angeles) Earthquake.

Dr. Madani has been a business and technical leader in charge of developing process and roadmaps for several large-scale Projects and Programs such as integrated Protection & Automation standards for both T and D. He has also been technical leader in developing solutions for major life cycle transition for both T & D programs addressing process structure and related standards.

Dr. Madani is actively involved in leading the electric utility industry on technology, reliability, and development of industry standards for use in large scale production grade smart grid systems. He has held many technical and leadership positions within the WECC Reliability, the US DOE / North American Synchrophasor Initiative (NASPI), as well as in the IEEE PES. Vahid is the recipient of the 2014 ***DOE Award for All Time Achievements*** in support of DOE Smart Grid Synchrophasor Standardization, and has been recognized by ***Intelligent Utility*** magazine for leadership and benchmark achievements and contributions in technology advancements in large investor-owned electric utilities industry.

Dr. Madani has many publications and has co-authored text books and reference handbooks. He is a Fellow of IEEE and an IEEE Distinguished Lecturer, Adjunct Faculty at Mississippi State University, a registered Electrical Engineer in California, and holds US and International patents.

Gordon Kawaley – BPA

Dr. Michael S. Mazzola is a professor of electrical and computer engineering at Mississippi State University and the Jack Hatcher Chair for Engineering Entrepreneurship. He joined the faculty at MSU in 1993. At MSU, he leads research in power systems modeling and simulation, as well as semiconductor devices for power electronics and their application. He has published more than 100 papers and has been awarded 14 patents. He is a registered professional engineer.

John T. Mead has been working as an electrical engineer in the electric power industry for over 30 years. Mr. Mead has planned and designed various large scale electric distribution and transmission projects throughout the United States. He has designed the electrical interconnections for over 80MW of renewable photovoltaic systems and has designed power electronic converters for various energy storage technologies. Currently Mr. Mead is a senior consulting engineer at Pacific Gas and Electric Companies Applied Technology Services department where he is the lead test engineering within PG&E's smart grid group. Mr. Mead graduated with a B.S. degree in Electrical Engineering from South Dakota School of Mines and Engineering in 1981 and he is a registered professional electrical engineer in the State of California.

Photo

Dr. Sakis (A. P.) Meliopoulos, **IEEE Fellow** – was born on March 19, 1949 in Katerini, Greece. He obtained a Diploma in Electrical and Mechanical Engineering from the National Technical University in Athens, Greece in 1972 and a Master in EE (1974) and a Ph.D. degree (1976) from the Georgia Institute of Technology in Atlanta, Georgia, USA. Dr. Meliopoulos' first professional association was with Western Electric (1971) in Atlanta, Georgia. After receiving a PhD degree in 1976, he joined the faculty of the Georgia Institute of Technology as an Assistant Professor (1976), Associate Professor (1982-88) and full professor (1989-present). Since 1999 he is the Georgia Tech Site Director of PSERC, an NSF I/URC. In 2006 Dr. Meliopoulos was named the Georgia Power Distinguished Professor and in 2015 was appointed Associate Director of the Institute for Information Security and Privacy. He is actively involved in education and research for improved safety and electromagnetic compatibility of electric power installations, protection and control of power systems and the application of new technology in these areas. Dr. Meliopoulos has pioneered several new analysis and design techniques for bulk power reliability analysis, safety, protection and electromagnetic compatibility of electric power systems. Most well-known is the EPRI transmission reliability program TRELLS (now renamed TransCARE), the GPS-synchronized harmonic state measurement system for transmission systems (first (1993) wide area measurement system on NYPA and still operational), the distributed dynamic state estimation method (SuperCalibrator), the Dynamic State Estimator based protection, his invention of the Smart Ground Multimeter, the EPRI grounding analysis programs, the WinIGS (Integrated Grounding System analysis and design), the GEMI (Grounding and ElectroMagnetic Interference) computer code, and the mGrid computer code – a methodology and implementation for precise analysis of multi-wire power systems with distributed energy resources. Dr. Meliopoulos has modernized many power system courses at Georgia Tech, introduced new courses, initiated the power system certificate program for practicing engineers and most importantly he has introduced visualization and animation methodologies that dramatically increase the teaching efficiency of complex power system concepts. Dr. Meliopoulos is a Fellow of the IEEE. He holds 3 patents, he has published three books, a chapter in the Standard Handbook for Electrical Engineers and over 300 technical papers. He has received a number of awards, including the Sigma Xi Young Faculty award (1981), twice the outstanding Continuing Education

Award, Georgia Institute of Technology (2002 and 2015), three of his papers have received the best paper award (IEEE-PES-SC-1984, IEEE-PES-EC-1987, and IEEE-CSS-HICSS 2002), he received the 2005 IEEE Richard Kaufman Award and the 2010 George Montefiore international award.

Dr. Liang Min – Lawrance Livermore National Lab

Sabrin Mohamed is a senior engineer at PG&E's Smart Grid Applications & Testing. She tests smart grid devices prior to pilot deployment and analyzes data from the field to better understand and manage grid behavior. She received a B.S. degree in Mechanical Engineering from MIT and an M.S from the University of Hartford. She has worked at the system level in a diverse range of fields spanning aircraft engines, autonomous navigation, electric vehicle design, and the smart grid. Her work in each of these fields has involved detailed analysis to understand system-level behavior and the presentation of this information in a cohesive, visual format to inform a greater viewpoint.

Thomas Nelson – NIST

Charles W. (Chuck) Newton is the President of Newton-Evans Research Company, a firm focused on electric power industry marketing research and technology consulting. Newton-Evans conducts research on grid-related automation and modernization trends, control systems and infrastructure topics.

Prior to launching Newton-Evans Research, Chuck had been a senior product planner with General Electric Information Systems and earlier with Control Data Corporation.

Chuck received an MBA in Marketing from Loyola University in Maryland and an undergraduate degree in Economics from Fordham University in New York City.

Chuck is a life member of IEEE PES and an active CIGRE member, serving on a number of working groups related to electric power grid modernization and cyber security efforts.

Norifumi Nishikawa - Hitachi

Dr. Damir Novosel, **IEEE Fellow** – is president of Quanta Technology, a subsidiary of Quanta Services. Previously, he was vice president of ABB Automation Products and president of KEMA T&D US. He has led development and implementation of pioneering concepts, methods, and products that improved reliability and efficiency of power grids.

Damir is elected to National Academy of Engineers in 2014. Dr. Novosel, an IEEE Fellow, serves as IEEE Power and Energy Society President. Damir is also member of the CIGRE US National Committee.

Damir holds 16 US and international patents and published over 100 articles in Transactions, Journals and Proceedings, receiving IEEE PES 2011 and 2013

Prize Paper Awards. He has led or participated in numerous IEEE standards, publications and other initiatives.

Dr. Novosel has been continuing contributor to education, including an adjunct professorship of Electrical Engineering at North Carolina State University, sponsorship of college scholarship programs, and support to industry courses and tutorials.

He holds PhD and MSc, BSc degrees in electrical engineering from Mississippi State University (where he was a Fulbright scholar) and the University of Zagreb, Croatia. Dr. Novosel was selected Mississippi State University Distinguished Engineering Fellow in 2015.

Dr. Manu Parashar is the Senior Software Manager, responsible for the Wide Area Monitoring Systems (WAMS) and Grid Stability product line at GE Grid Solutions (formerly known as ALSTOM Grid Inc). He has been involved in the Research and Development activities of GE's Stability Solutions, including synchrophasor applications, and was the technical lead in delivering these applications to the North American customers.

Prior to joining GE, he was with Electric Power Group where he was responsible for all synchrophasor related research & development initiatives, including leading the development of the real time and offline synchrophasor applications.

Manu has been active in various technical forums in North America such as the North American SynchroPhasor Initiative (NASPI) and IEEE Power Systems Relaying Committee (PSRC), and has numerous publications including a co-author of the "Wide Area Monitoring and Situational Awareness" chapter of the Electric Power Engineering handbook. Manu received his BS, MS, and PhD degrees in Electrical Engineering from Cornell University, Ithaca, NY, in 1997, 1999, and 2003, respectively.

Michael Pesin is Deputy Assistant Secretary for the Power Systems Engineering Research and Development Division in the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability. Mr. Pesin has 30 years of experience in the electric utility industry, much of it directing development and execution of advanced technology programs. His most recent assignment was with Seattle City Light (SCL) where he developed the technology strategy, managed research and development projects and directed strategic programs to management demonstration projects. His subordinate strategic programs included substation automation, distributed automation, advanced metering infrastructure, enterprise OT communication networks, energy storage, microgrids, transactive energy management and distributed management systems.

Mr. Pesin has numerous professional affiliations, publications and patents. He holds a Master of Science in Electrical Engineering from St. Petersburg State Polytechnic University, St. Petersburg (Leningrad), Russia, is a Licensed Professional Electrical Engineer in the State of Washington, a Certified Project Management Professional (PMP) and a Cisco Certified Design Associate (CCDA).

Ryan Quint –NERC

Gary Rackliffe is the Vice President of Smart Grids North America, ABB Inc. Gary leads ABB's Smart Grid initiative in North America, including business development, strategic partnerships, and ABB's marketing and product strategies.

Gary has over 25 years of industry experience in both transmission and distribution and has worked for ABB for 18 years in Raleigh, NC. He was previously the Vice President of Marketing and Sales for the Northeast and Mid-Atlantic sales region, covering ABB T&D equipment, power electronic products, systems, and services for the utility, power generation, and public power customers in the region. Other positions include Vice President of Strategic Marketing for the Power Products and Power Systems divisions of ABB in North America and Vice President of Marketing, Sales, and Business Development for ABB's Network Management business that provides SCADA/EMS/DMS/OMS and market systems. He also directed ABB's Flexible AC Transmission Systems (FACTS) business for the U.S.

Gary holds BS and ME degrees in Electric Power Engineering from Rensselaer Polytechnic Institute and an MBA degree from Carnegie Mellon University.

Gary is a member of the GridWise Smart Grid Implementation Committee, the DistribuTECH advisory committee, and the NEMA Smart Grid Council. He is a Senior Member of IEEE and a Registered Professional Engineer in the Commonwealth of Pennsylvania. He is the co-author of a book on T&D planning, and has published several technical papers.

Peter Rietmann was born in Frauenfeld, Switzerland. He received the BSc. diploma in electrical engineering from the Zurich University of Applied Sciences in 1992. In 1993 he joined ABB where he worked in different positions in the area of substation automation and protection. Peter has been the convener of a CIGRE working group defining guidelines for specification and evaluation of substation automation. Working as global product manager for substation automation at ABB Switzerland he was one of the driver for ABBs standard substation automation solutions compliant to IEC61850. Today he is based at ABB in Raleigh NC, USA and beside his role as global product manager for substation automation solutions he also is in charge of digital substation for North America in the role as program manager.

Julio Romero Aguero – QT

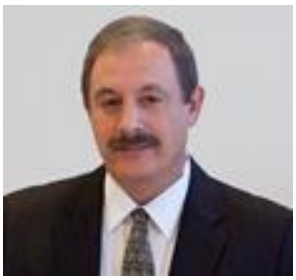
Dr. Greg Rzepka received his M.S. degree in Electrical Engineering from the Silesian University of Technology and Ph.D. in Electrical Engineering from the Missouri University of Science and Technology. Prior to joining Schweitzer Engineering Laboratories, Inc. (SEL) in 2005, Dr. Rzepka worked at Transmission System Operator in Poland.

Photo

At SEL, he heads up the Protection Systems department in Research and Development and is responsible for SEL's transmission, substation, distribution, generation and industrial product lines.

Rian Sackett – BPA

Dr. Mohammad Shahidehpour, **IEEE Fellow** – is the Bodine Chair Professor in the Electrical and Computer Engineering Department and Director of the Robert W. Galvin Center for Electricity Innovation at IIT. He is also the Principal Investigator of over $60 million grants on smart grid research and development. His DOE Project on Perfect Power Systems has converted the entire IIT Campus to an islanded microgrid. He has initiated CSMART (Center for Smart Grid Applications, Research, and Technology) at IIT for promoting the smart grid cybersecurity research and implementation and enhancing the resilience of wireless networked communication and control systems in smart cities. His SPIKE initiative is facilitating the design and the implementation of affordable microgrids in impoverished nations. Dr. Shahidehpour is a member of the US national Academy of Engineering.



Jeff Shiles is the Principal Manager of Protection & Automation Engineering at Southern California Edison. His 25 year career has spanned a variety of technical leadership and managerial roles at SCE, including Transmission Planning, Distribution Engineering, T&D Business Planning, and Asset Management & Operations Support. Jeff has a broad perspective of the T&D organization at SCE with an emphasis on teamwork, collaboration, and integrating work activities across different functional areas.

Jeff earned his Bachelor of Science Degree in Electrical Engineering with emphasis in power systems from California Polytechnic State University, San Luis Obispo and is also a registered Professional Engineer in the State of California.

S. A. Soman, IIT – India

Chase Sun received a B. S. in Electrical Engineering and Computer Science, Power Option, from UC Berkeley, where he learned about alternative energy and electric power systems. He is a licensed Electrical Engineer in California, since 1981.

He joined PG&E in 1977 and worked in various departments including, distribution planning, switchyard engineering, alternative energy engineering, power plant engineering, station construction, project management, substation asset management, distribution protection, substation maintenance, and transmission planning,. He was the electrical engineer on various power generation projects, both large and small. He developed a balance of plant cost estimate and associated conceptual design for a 1.2 MW modular PV central station power plant in 1982, while he was working in the alternative energy engineering group. He also worked on the design changes for the 2.5 MW Solano Wind Turbine (Boeing Mod 2) before it was dismantled due to wind shear concerns in the late 1980's. He coordinated the first complete set of PG&E generator interconnection requirements in 1984. He also designed the electrical system and control logic for an 125 kW R&D Turbo-expander induction generator in the early 1990's where he learned about self-excitation of induction generator during start-up. He was on the team that drafted and issued the PG&E Interconnection Handbook for both load and generation in 1997. He was on the IEEE-929, and Rule 21 working groups where the certification concept and streamlined review/approval process for the small PV inverters were developed about 15 years ago. While he was in distribution substation asset management, in the 1990's, he was responsible for the distribution protection standards/guidelines and developed the protection requirements for the new and replacement distribution substation transformers and breakers.

He is a principal engineer in Distribution Planning at PG&E, responsible for assessing system-wide DG issues, and representing PG&E, on various IEEE-1547, UL-1741, California Rule 21, CEC/CPUC Smart Inverter working groups.

Dr. Kai Sun is an Assistant Professor in the Department of EECS, the University of Tennessee, Knoxville and a member of the CURENT research group. Dr. Sun earned his Ph.D. in Control Science and Engineering and a B.S. degree in Automation both from Tsinghua University in Beijing, China. Before joining the UT, Dr. Sun was a Project Manager with the EPRI in Palo Alto, California from 2007-2012 for the R&D programs in Grid Operations and Planning. He is an editor of IEEE Transactions on Smart Grid and an associate editor of IET Generation, Transmission & Distribution. Dr. Sun received the NSF CAREER Award in 2016. His research areas include analysis and control of interconnected power systems using wide-area measurements and prevention and mitigation of cascading failures. Dr. Sun holds three patents in those areas.

Jonathan Sykes is the Senior Manager of System Protection at Pacific Gas and Electric Company (PG&E) in San Ramon, California. Jonathan graduated from the University of Arizona in 1982, is a Professionally Licensed Electrical Engineer (PE), and has more than 30 years of engineering experience in System Protection and working for electric industry. He participates on several committees in the Western Electric Coordinating Council (WECC) and is past Chairman of the North American Electric Reliability Corporation (NERC) System Protection and Control Subcommittee (SPCS). Jonathan has authored and co-authored papers for conferences and publications and is an active senior member of IEEE and regularly contributes to the Power System Relay Committees. Jonathan has been involved in EHV protection and control for over 15 years and established standards in EHV relaying and SPS/RAS design and implementation. Jonathan has been active in NERC and WECC standards interpretation and development and is a subject matter expert in the interpretation of various protection and critical infrastructure related standards.

Jonathan presently leads a diverse group of engineers, specialists, and asset planners that provide oversight for all aspects of System Protection within PG&E. This includes life cycle maintenance and replacement of approximately 40,000 protective relays and protection schemes installed in Northern California. His team determines the performance and drives the standards, policy and procedures around these critical schemes. Quality, sustainability, compliance, affordability, technology and human performance are some of the areas of concern and focus in creating a world class System Protection team at PG&E.

Shirin Tabatabai is a Test Supervisor, part of the Substation Test group, at PG&E. She is responsible for a group of diverse electrical and power engineers charged with supporting technicians in the field testing equipment that protects the electrical grid.

Ms. Tabatabai has over 15 years' experience in the Electric Utility Operations. She plays an active role in recruiting new engineers to PG&E from across the country to help ensure the most robust and talented workforce for PG&E. Ms. Tabatabai helped found PG&E's W-STEM group in 2012 which is an organization dedicated to recruiting, developing and retaining talents in science, technology, engineering and mathematics [STEM] at PG&E. Prior to joining PG&E, she worked with the California Department of Water Resources.

Ms. Tabatabai graduated from California Sacramento State University with a B.S. Degree in Electrical Engineering and M.S. in Power Engineering. Shirin Tabatabai is an IEEE Senior Member and Women In Engineering [WIE] and IEEE USA Liaison. In addition she has served as a volunteer for IEEE for over 10 years holding various leadership positions including the San Francisco [SF] Section Chair and the Bay Area Council Chair.

Chifong Thomas is the Director, Transmission Planning and Strategy at Smart Wire Grid, Inc. (SWG),

where she supports the various applications and deployment of distributed series reactors and other developing smart grid products. Prior to joining SWG, she manages transmission interconnections at BrightSource Energy, Inc. for the development of utility scale solar thermal power plants ranging from 200 MW to 1,000 MW. She has more than 42 years of electric utility experience, more than 37 of which in electric transmission planning for the Pacific Gas and Electric Company (PG&E) transmission system from 60 kV to 500 kV. She has both conducted and supervised transmission planning studies to develop plans for the PG&E transmission system. She has served as expert witness in various regulatory and judicial forums; and participated in developing planning methodologies, processes and criteria for PG&E and WECC. She is the past secretary of the WECC Planning Coordination Committee and past chair of the WECC Technical Studies Subcommittee. She has also served on various WECC task forces, NERC Standards Drafting Teams, on Industry Advisory Committees of the California Energy Commission and of EPRI and on the Technical Advisory Committee (Electrical Engineering) to the California Board of Registration for Professional Engineers and Land Surveyors. Ms Thomas holds a Bachelor of Science Degree in Electrical Engineering from Washington State University and is a registered Electrical Engineer in the State of California. She is also a senior member of the Institute of Electrical and Electronics Engineers (IEEE).

Jerry Timiraos is Senior Manager of Substation Test at PG&E. He has 30+ years of experience in

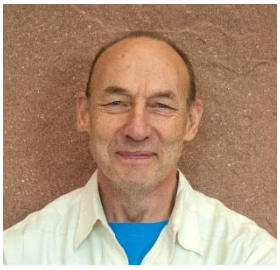
maintenance, construction and engineering at PG&E. Prior to joining PG&E he spent 15 years at United Illuminating Co., a Southern Connecticut electric utility where he started his career as a Test Engineer.

As a Senior Manager for Substation Test he is involved in all protection, automation, associated communications and controls for PG&E's routine maintenance compliance as well as all the testing and commissioning for all PG&E substation projects that must be successfully completed prior to release to operations.

Jerry has a Master of Business Administration (MBA) from the University of Phoenix, a Master of Science, Computers and Information Science from the University of New Haven, and a Bachelor of Science, Electrical Engineering from the University of New Haven. Jerry is a Professional Engineer in the State of California and is a Senior Life Member of IEEE.

Xing Wang – GE ALSTOM

Dr. Marc Weiss worked at NIST from 1979, specializing in time transfer techniques and statistics of



timing systems, is now a contractor for NIST. He received the NBS Applied Research Award for a first GPS timing receiver in 1983. He was awarded a patent for the Smart Clock algorithm in 1993. Dr. Weiss won the 2013 NIST William P. Slichter Award for linking NIST with industry, in large part because of WSTS and ITSF. Marc founded and has led WSTS, the Workshop on Sync and Timing Systems, annually since 1992, which inspired ITSF as a sister conference. He is the NIST co-chair of the Timing subgroup of the NIST Cyber-Physical Systems Public Working Group, and has led the NIST program to

support GPS in developing their clocks and timing systems since 1980. He has worked on and published Relativity issues as they relate to GPS and to primary frequency standards.

Ken Wells is Senior Director of Substations at Pacific Gas and Electric Company. Ken Wells joined

PG&E in 1987 as a Power Systems Engineer. He held a proactive role in supporting the electric system dispatchers with transmission system contingency analysis and technical support for evaluation of proposed clearances which could impact the electric system. Since then, Ken has held a variety of positions supporting our electric and gas systems - supervisor of electric engineers; senior substation engineer; principal project manager; electric control center operations manager; director of maintenance & construction for both gas and electric; senior director of gas & electric system support; and his current role as senior director of substations.

As part of his varied experiences, Ken was responsible for the project to install the new Outage Information System (OIS) throughout Pacific Gas & Electric Company. This program implemented new work process and technology for emergency management throughout the PG&E system. Currently, as senior director of substations, Ken has an organization of approximately 1,100 employees with the responsibilities of substations maintenance & construction and testing, engineering services, system protection and automation.

Ken received a Bachelor of Science degree in Electrical Engineering from Washington State University and a Masters in Engineering Management from Santa Clara University. He is also a Registered Professional Electrical Engineer with the State of California.

Dr. Murty V. V. S. Yalla, **IEEE Fellow** – has been with Beckwith Electric Co. since 1989 and presently holds the position of President. Previously, he was Vice President of R&D/Engineering from 1994 to

2004. He received a Diploma in Electrical Engineering from Andhra Polytechnic, Kakinada, India in 1976; a Bachelors in Electrical Engineering from Jawaharlal Nehru Technological University, Kakinada, India in 1981; a Masters in Electrical Engineering from Indian Institute of Technology (IIT), Kanpur, India in 1983; and a Ph.D. in Electrical Engineering from the University of New Brunswick, Canada in 1987. From 1988 to 1989, Dr. Yalla taught and conducted research on digital power system protection at Memorial University in Newfoundland, Canada. He has published several research papers in international journals on digital protection. He holds five U.S. patents in the areas of digital controls and protective relays.

Dr Yalla has been appointed as the chairman of the International Electrotechnical Commission (IEC, Geneva, Switzerland) Technical Committee 95, Measuring Relays and Protection Equipment from Mar 2015 to Feb 2021. In this capacity he provides leadership to experts from the national committees of 18 participating countries in the development of International Standards. He is also the convener of IEC TC 95 MT4 which developed the following international standards during the past 10 years: IEC 60255-151, IEC 60255-127, IEC 60255-121, IEC 60255-149 and IEC 60255-187 (under development).

He was a U.S. delegate to the International Council on Large Electric Systems (CIGRÈ, Paris, France) Working Groups B5.04 Modern Techniques for Protecting and Monitoring Generating Plants and B5.05 Modern Techniques for Protecting, Controlling and Monitoring of Power Transformers. He was also a member (subject matter expert) of the North American Electric Reliability Corporation (NERC) System Protection and Control Subcommittee (SPCS).

In 2006, Dr. Yalla was elected to Fellow grade by the IEEE Fellow Committee for his contributions in computer relays for power systems. Presently he serves on the IEEE PES Fellows committee. He is an active member of the IEEE Power System Relaying Committee (PSRC) for the past 23 years. He was the Chairman of the Rotating Machinery Protection Subcommittee of the PSRC (Jan 2012 to Jan 2015). He

was a member of the working group which developed IEEE standard 1547. He was the chairman of the working group which developed IEEE Standard C37.102-2006 "Guide for AC Generator Protection." He co-authored an IEEE PES tutorial on the "Protection of Synchronous Generators." He chaired the working group which received the IEEE Power Engineering Society (PES) Working Group Recognition Award for an outstanding technical report "Application of Peer-to-Peer Communications for Protective Relaying" at the IEEE PES General Meeting in Denver, Colorado in June 2004.

He received the IEEE Florida Council Outstanding Engineer Award in 2005. Dr. Yalla received the IEC 1906 Award in 2010 which honors the IEC experts around the world in recognizing their exceptional recent achievements and contributions to the IEC committees. He also received the Indo-US Chamber of Commerce Businessman of the Year Award in 2013.

Steve Yang – BPA

Pacific Gas and Electric Company, incorporated in California in 1905, is one of the largest combination natural gas and electric utilities in the United States. Based in San Francisco, the company is a wholly owned subsidiary of PG&E Corporation.

There are 21,000 employees who carry out Pacific Gas and Electric Company's primary business — the transmission and delivery of energy. The company provides natural gas and electric service to approximately 15 million people throughout a 70,000-square-mile service area in northern and central California.

PG&E customers include:

- **20,850 schools**
- **3,250 hospitals**
- **20,700 high-tech companies**
- **768 military facilities**

Pacific Gas and Electric Company and other utilities in the state are regulated by the California Public Utilities Commission. The CPUC was created by the state Legislature in 1911.

Fast Facts

- Service area stretches from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east.
- 935 Transmission and Distribution Substations
- More than 139,000 circuit miles of electric lines (60, 70, 115, 230, and 525kV).
- More than 70% of 500kV lines are compensated
- More than 45,800 miles of natural gas pipelines
- 5 million electric customer accounts.
- 4 million gas customer accounts.
- Peak System Load – 30 GWH

Environmental Commitment

Pacific Gas and Electric Company has long been recognized as an environmental leader by providing safe, economical and reliable products and services in a responsible and environmentally sensitive manner. Doing more so that our impact on the environment is less drives us to adopt new technologies, improve our environmental management practices, build strong ties with local communities, reach out to stakeholders to address challenges and contribute to the development of public policies that raise the bar for our industry. The Pacific Forest and Watershed Lands Stewardship Council was created in 2004 to oversee the implementation of the Land Conservation Commitment, wherein PG&E will either donate or create conservation easements to preserve and enhance over 140,000 acres of PG&E's watershed lands and 655 acres in the Carizzo Plains. The Pacific Forest and Watershed Lands Stewardship Council will also oversee the implementation of the Environmental Opportunity for Urban Youth Program, which will provide inner city children with wilderness experiences and new urban parks and recreation facilities.