

**Mark Adamiak, IEEE Fellow**, Mark Adamiak 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 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, the US Regular Member for the CIGRE Protection & Automation study committee, 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. 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.

**V.K Agrawal** is working as Executive Director at Power System Operation Corporation Ltd. (POSOCO), a subsidiary organization of Powergrid Corporation of India Ltd., and is currently in charge of the National Load Dispatch Centre of India. Before this he has headed Northern Region and Southern Region load dispatch centers of the country also.



Mr. Agrawal has done M. Tech in 'Power Apparatus and Systems' from I.I.T., Delhi. He has more than 33 years of experience in power sector. While discharging official responsibilities, he was very closely associated with the expansion and synchronization of the large regional grids and development of the power markets in the country. He has also

steered the implementation of the Synchrophasors pilot projects in India, under which more than 50 nos. of PMUs have been commissioned and data is being received at the different load dispatch centres. He is a Senior Member of IEEE and Indian Representative of CIGRE Study Committee – C2. He has authored a number of papers on the subject of power system operation and control and is also co-editor of the book titled 'Grid Security and Management' published by POWERLINE, India.

**Mike Ahmadi** is Global Director of Energy and ICE Security, and has extensive background in both Project Management and Information Systems. Mr Ahmadi manages projects addressing cyber security in multiple vertical industries, including energy and health care. Mr Ahmadi is a USTAG (US Expert) for IEC 62443 standards working groups. Participated in the development of testing and certification standards under the NIST SGIP CSWG Smart Grid Security Testing and Certification Subgroup, as well as CSWG Design Principles sub-group. Served as a core member of the UCAlug OpenSG Embedded Security Task Force (part of the SG Security Working Group), with a focus on creating security requirements for the Energy Utility Industry.



Active member of the DHS ICSJWG. Assisted the California Public Utility Commission (CPUC) in drafting security requirements for Smart Grid deployment.

Currently serving on the US Secret Service Electronic Crimes Task (USSS ECTF) Advisory Board. Achievements also include serving on the Board of Directors of the ASQ East Bay Section, Editorial Board member of the Information System Security Association (ISSA), contributor to the American Bar Association Information Security Book.

**Neelofar Anjum** joined PG&E 7 months ago. She came from DNV GL where she was working in renewable power integration and interconnection and led multiple projects in the process to comply with utilities requirements. She is an expert in transmission and distribution planning analysis tools. She worked in SCADA/EMS/DMS design when she worked for powergrid India.

**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 more than 35 years experience in power systems protection, automation, control and communications.



Alex is Principal Engineer for OMICRON electronics in Los Angeles, CA. He is IEEE Fellow and Member of the Power Systems Relaying Committee and Substations C0 Subcommittee. He is 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” and D21 “Contribution to IEC TC 95 WG MT4 Protection Functions Testing”. He is member of IEC TC57 and Convenor of CIGRE WG B5.27 “Implications and Benefits of Standardised Protection Schemes” and member of several other CIGRE B5 working groups. He holds four patents and has authored and presented more than 400 technical papers. Dr. Apostolov is Editor-in-Chief of PAC World.

Dr. Apostolov is IEEE Distinguished Lecturer and Adjunct Professor at the Department of Electrical Engineering, Cape Peninsula University of Technology, Cape Town, South Africa.

**Wendy al-Mukdad**, PE, has worked as a Utilities Engineer (UE) in the Energy Division of the California



Public Utilities Commission (CPUC) for more than a dozen years. Wendy currently works for the Grid Planning & Reliability Section on regulatory advisory work related to 'Smart Grid' related electric investor owned utility (IOU) capital projects including revenue requirements for General Rate Cases (GRCs). Wendy performs technical engineering analysis related to: Smart Grid (SG) related projects; SCADA; DMS/DA/Feeder Automation; distributed generation interconnection; electric vehicles integration; electric energy storage; Advanced Metering Infrastructure (AMI); AMI Home Area Networks (AMI HAN); and other electric utility Transmission & Distribution

(T&D) and/or Information Technology (IT) infrastructure-related projects with a focus on safe, reliable, and cost-effective utility services and implementation of multiple California/CPUC energy policy mandates and goals. Wendy initiated, worked with and supervised a UE intern resulting in January 2013 staff report “Advanced Inverter Technologies Report”, identifying issues such as: 1) voltage regulation by Distributed Energy Resources (DER) not being allowed by current U.S. interconnection standards (IEEE 1547 and UL 1741); and 2) the lack of consistent U.S. interoperability and performance standards for inverters and inverter controllers to communicate with utility distribution management systems. Wendy worked in an advisory role for the CPUC’s Smart Grid rulemaking (R.08-12-009) to meet a tight deadline for a final decision required by Senate Bill 17 (SB 17) to define Smart Grid Deployment Plan requirements for utilities’ future filings.

Additionally, Wendy has been active in the IEEE Power & Energy Society for the last few years, including as current San Francisco Chapter Chair and Region 6 (Western U.S.) Scholarship Plus Initiative Committee member. Wendy previously worked on Federal Energy Regulatory Commission (FERC) interstate natural gas GRC proceedings for the CPUC to ensure adequate infrastructure and reliable supplies at reasonable prices for California customers. Wendy also prepared CPUC staff testimony filed at FERC in 2004 supporting the CPUC’s protest of siting a proposed Sound Energy Solutions (Mitsubishi) liquefied natural gas (LNG) import facility at the Port of Long Beach due to public safety issues for nearby residences and schools. Prior to the CPUC, Wendy worked for eight years for the U.S. General Services Administration in San Francisco, and worked as a project manager for federal building renovation projects including energy efficiency projects (implementing the Energy Policy Act of 1992) and security projects. Wendy has a B.S. in Electrical and Computer Engineering from the University of California, Davis and is a UC Regents Scholar and Tau Beta Pi member.

**Maria Nohemi Arboleda Arango** is the Manager of the National Dispatch Center at XM Compañía de Expertos en Mercados S.A. (subsidiary of Interconexión Eléctrica S.A. –ISA–), the Colombian Independent System Operator and Market Administrator. Mrs. Arboleda has 26 years of experience in the power and energy industry and has previously been Director of operations planning, Director of market settlement operations and Director of economic dispatch at XM.



Maria Nohemi obtained her Electrical Engineering degree from Universidad Nacional de Colombia and her Specialization and Master degree in Electrical Engineering from Universidad Bolivariana de Colombia. She attended a Training course in Sweden in Control and Operation of Power Systems and an Advanced Management Program at the Universidad de los Andes.

**Dr. Farrokh Habibi-Ashrafi** is a Senior Lead Engineer in the Advanced Technology Organization of Southern California Edison Company (SCE). He has been working at SCE for more than 14 years, with 10 years of it as a Senior Protection Engineer. At his present position, he is performing studies in development of Phasor Measurement Technology, and advanced protection and control applications at SCE.



Prior to joining SCE, Dr. Habibi-Ashrafi was Principal Manager of an engineering company providing Substation Engineering and Design to electric utilities in California.

Dr. Habibi-Ashrafi received his Engineering degree in Electrical and Mechanical Engineering from University of Tehran, and Ph.D. in electrical engineering from University of Southern California. Dr. Habibi-Ashrafi is a Life Member of IEEE, part-time faculty at California State University-Los Angeles, and registered professional electrical engineer in State of California.

**Dr. Shay Bahramirad** is a Manager of Smart Grid and Technology at ComEd. Her responsibilities include leading the Smart Grid organization across ComEd, business case development and performance measures for Smart Grid technology deployments, and defining, developing, and implementing Smart Grid initiatives in ComEd's service territory. She is also an Adjunct Professor at the Illinois Institute of Technology.



Shay holds multiple advanced degrees, including a Ph.D. in Electrical Engineering from the Illinois Institute of Technology. She is a U.S. representative of power quality monitoring in CIGRE (International Council of Large Electric Systems) and leads the development of the IEEE P1815 Standard: Smart Distribution Application Guide, and serves as Technical Chair of several IEEE conferences such as T&D and the Great Lake Symposium. She has published and presented several technical articles and

seminars on power systems topics, primarily exploring innovative technologies and practices in the power grid. Shay is the committee chair for the PES Women in Power, a Senior Member of IEEE and the editor-in-chief of Asset Management in Smart Grid transaction journal.

**James Barich** - Principal Project Manager with 27 years of Utility experience at PGE, specializing in Information Technology Infrastructure projects.



James primary focus over the last 10 years has been support of PG&E's critical business system upgrades to the Energy Management Systems, Disaster Recovery and Pacific AC Intertie RAS. James manages the Network and overall implementation of Synchrophasor technology at PG&E.

He is a registered Project Management Professional (PMP) since 2005.

**Larry Bekkedahl** is the Senior Vice President of Transmission Services for the Bonneville Power Administration (BPA), located in Vancouver, Washington. Mr. Bekkedahl has over 31 years of experience in the electric utility industry. His career has included work with Montana Power, PacifiCorp, Clark Public Utilities and BPA.



Larry is also a leader on BPA's Technology Innovation Council for smart grid, demand response, and research and development projects. Mr. Bekkedahl's experience also includes 6 months in Japan with a utility exchange program. He has also developed generation in Southeast Asia and participated in the USAID/USEA international utility exchanges in Bangladesh, Philippines, and the Republic of Georgia.

Larry graduated from Montana State University in 1984 with a Bachelor of Science degree in electrical engineering. He is currently serving on the Electric Power Research Institute (EPRI) Transmission Executive Committee, is a US Board member for CIGRE, serves on the Executive committee of the Western Electricity Coordinating Council (WECC) Synchrophasor Project, and is an Advisory to the Engineering Department for Washington State University, Vancouver

**Robert (Bob) Beresh** is a Senior Member of the IEEE and active participant of the Power System Relaying Committee as well as former chair of the Relaying Practices Subcommittee. He has a background in relay type testing, power system modeling, IEC 61850 as well as R&D in emerging areas of power system protection and control. Bob currently works in the area of Protection and Control Strategy for a large transmission and distribution company and is a Professional Engineer licensed in the province of Ontario.



**Dr. Merwin Brown** is the Director of Electric Transmission Research at the California Institute for Energy and Environment, within the University of California Office of the President. Dr. Brown manages a team of professionals who develop and administer technology research and development for California's future electric transmission system. Their efforts are helping develop and commercialize new technologies for the modern electric grid needed to meet California's aggressive energy-policy goals for reliable, safe, affordable, and environmentally sound transmission and distribution systems. This work is largely funded by the California's Public Interest Energy Research Transmission Research Program at the Energy Commission. Dr. Brown also manages the Sacramento office for CIEE, which is headquartered in Oakland, CA.



Dr. Brown's comprehensive knowledge of electric utilities and of new and emerging utility technologies is derived from 40 years of experience with firms such as Pacific Gas and Electric Company, Arizona Public Service, Pacific Northwest National Laboratory, and the National Renewable Energy Laboratory. Dr. Brown has managed R&D programs for private and public-interest technology valued at up to \$50 million per year with groups as large as 100 scientists and engineers.

Dr. Brown has extensive training and experience in strategic business planning and has held advisory positions for many electricity industry organizations, and has served as an Arizona Solar Energy

Dr. Brown has numerous technical publications and presentations to his credit, and holds B.S. and Ph.D. degrees in nuclear engineering from Kansas State University. For additional bio material, refer to the CIEE's web site <http://uc-ciee.org/technical-experts/3/dpeople>.

**Christoph Brunner**, IEEE Fellow has graduated as electrical engineer at the Swiss Federal Institute of



Technology in 1983. He is Utility Industry professional with over 25 years of industry experience with both knowledge across several areas within the Utility Industry and of technologies from the Automation Industry. He is president of it4power in Switzerland, a consulting company to the power industry. He has worked as a project manager at ABB Switzerland Ltd in the business area Power Technology Products in Zurich / Switzerland where he was responsible for the process close communication architecture of the substation automation system. He is convenor of the working group (WG) 10 of the IEC TC57 and member of WG 17, 18 and 19 of IEC TC57. He is member of IEEE-PES and IEEE-SA and active in several working groups of the IEEE-PSRC (Power Engineering Society – Relay Committee), and member of the PSRC main committee and the subcommittee H. He is international advisor to the board of the UCA international users group.

**Claudio Cañizares** has been with the E&CE Department, University of Waterloo since 1993, where he has held various academic and administrative positions and is currently a Full Professor,



Hydro One Endowed Chair and an Associate Director of the Waterloo Institute for Sustainable Energy (WISE). His main expertise is in the areas of stability, modeling, simulation, control, optimization and computational issues in power and energy systems within the context of competitive energy markets and smart grids. He is a Fellow of the IEEE and has been the recipient of various IEEE-PES Working Group awards, and also holds and has held several leadership positions in various IEEE-PES technical committees, working groups and task forces.

**Dr. Henry Chao** is the Vice President, of System & Resource Planning for the New York Independent System Operator. Dr. Chao obtained his Ph.D. degree from Georgia Institute of Technology; Atlanta, GA, and has over 30 years of experience in electric utility planning, operations, and asset management. As Vice President, System and Resource Planning, Dr. Chao is responsible for resource planning, interconnection studies, and transmission reinforcements and expansion in New York State in accordance with the objectives and procedures of the NYISO. He represents NYISO in various FERC, NERC/NPCC and NYSRC Committees dealing with bulk power system reliability and economics. Prior to joining NYISO, while at ABB, Dr. Chao was a Group Vice President in Services



Technologies directing consulting and software development leveraging ABB's advanced technologies and know-how which were built to analyze energy markets, relieve transmission congestion, and foster improved understanding of the competitive forces underlying the changes in the electric power sector.

**Jeff Dagle** has worked at the Pacific Northwest National Laboratory, operated by Battelle for the U.S.



Department of Energy (DOE), since 1989 and currently manages several projects in the areas of transmission reliability and security, including the North American SynchroPhasor Initiative (NASPI) and 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. He is a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), a member of the International Society of Automation (ISA) and National Society of Professional Engineers (NSPE), and is a licensed Professional Engineer in the State of Washington. He received the 2001 Tri-City Engineer of the Year award by the Washington Society of Professional Engineers, led the data requests and management task for the U.S.-Canada Power

System Outage Task Force investigation of the August 14, 2003 blackout, supported the DOE Infrastructure Security and Energy Restoration Division with on-site assessments in New Orleans following Hurricane Katrina in fall 2005, and is the recipient of two patents, a Federal Laboratory Consortium (FLC) Award in 2007, and an R&D 100 Award in 2008 for the Grid Friendly™ Appliance Controller technology. Mr. Dagle was a member of a National Infrastructure Advisory Council (NIAC) study group formed in 2010 to establish critical infrastructure resilience goals. He received B.S. and M.S. degrees in Electrical Engineering from Washington State University in 1989 and 1994, respectively.

**Dr. Raymond de Callafon** is a Professor with the Department of Mechanical and Aerospace Engineering (MAE) at the University of California, San Diego (UCSD). Prof. de Callafon received his PhD degree from Delft University of Technology, Netherlands in Mechanical Engineering in 1998 with a specialization in Systems and Controls. His expertise is in signal processing, parameter estimation, experiment-based modeling, adaptive control and motion control. He is currently directing the System Identification and Control Laboratory (SICL) and is an affiliated faculty of the Center for Magnetic Recording Research (CMRR) and the Cymer Center for Control Systems and Dynamics (CCSD) at UCSD. Dr. de Callafon's research and consulting work cover applications in structural damage/health monitoring; data-based low complexity modeling of electric energy storage and distribution systems; adaptive feedback regulation in active noise control and vibration control systems; advanced motion control for high precision data storage systems (Optical Drive, Hard Disk Drive and Linear Tape systems) and aero(servo)elastic systems for flutter prediction and control.



**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. J. Patrick Donohoe** received the B.S. and M.S. degrees in Electrical Engineering from Mississippi State University in 1980 and 1982, respectively. He received the Ph.D. degree in Electrical Engineering from the University of Mississippi in 1987. Dr. Donohoe joined the Department of Electrical and Computer Engineering at Mississippi State University in 1986 where he is currently holds the title of Professor and Paul B. Jacob Chair. His primary research interests include computational electromagnetics, radar, electromagnetic compatibility, electromagnetic properties of composite materials, geomagnetic disturbances, and lightning protection. Dr. Donohoe is a Senior Member of IEEE, a registered professional engineer in the state of Mississippi, and a member of Eta Kappa Nu.



**Luther Dow**, PE, Sr. Director, West Coast Operations. Luther Dow has over 40 years of electric utility, research, manufacturing and consulting experience. He has had numerous managerial and technical responsibilities, including electric research, equipment manufacturing, electric distribution planning, electric distribution operations, transmission, substation and distribution construction and maintenance, asset strategy and project prioritization. Prior to joining Quanta Technology, Luther worked for PG&E, EPRI and Doble Engineering.



**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 Jan 1999 supporting 500kV and Special Protection Schemes.

**Dr. Pavel V. Etingov** is a senior research engineer at Pacific Northwest National Laboratory (PNNL), Richland, WA. His research interests include stability analysis of electric power systems, power system operation, modeling and control, FACTS devices, wind and solar power generation, and application of artificial intelligence to power systems



He graduated with honors from Irkutsk State Technical University specializing in electrical engineering in 1997. He was a fellow at the Swiss Federal Institute of Technology in 2000-2001. P.V. Etingov received his Ph.D. degree in 2003 from the Energy Systems Institute of the Russian Academy of Sciences, Irkutsk, Russia.

He is a member of the IEEE Power & Energy Society (PES).

**Dr. Gerald FitzPatrick** is the Leader of the Applied Electrical Metrology (AEM) Group which continues a legacy begun by NIST's predecessor, the National Bureau of Standards (NBS), which had supported the electric power industry from practically its inception. He joined NIST in 1988 as a project leader in the high voltage area and electrical insulation research. He received the B.S. degree in Physics from Rutgers University, the M.S.E.E. from the New Jersey Institute of Technology, and the Ph.D. degree in Electrical Engineering from the State University of New York at



Buffalo.

The AEM Group that Jerry leads conducts research in electrical measurements, including synchro metrology, develops precision measurement techniques and offers measurement services for calibration of phasor measurement units (PMUs). A synchro metrology testbed was established in collaboration with the Department of Energy to develop protocols and standards for testing of PMUs. The AEM Group also conducts research in electric power and energy metrology, maintains the national standards, and provides measurement services for standard meters. Jerry also is part of the NIST efforts to fulfill its mandate given by the 2007 Energy Independence and Security Act (EISA) for the Smart Grid. Dr. FitzPatrick is the NIST co-lead on the Transmission and Distribution Domain Expert Working Group (DEWG) of the Smart Grid Interoperability Panel (SGIP) which is examining interoperability issues and standards for T&D. He has been active in IEEE and is Past Chair of the IEEE PES Power Systems and Instrumentation Committee. He began his career with Exxon Research and Engineering Company where he was part of team that conducted electro-optic studies of failure mechanisms in transformers and dielectrics research in high voltage cable insulation.

**Dr. Yong Fu** is an Assistant Professor in the Electrical and Computer Engineering Department at Mississippi State University. 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 has over 15 years of research experience in the area of power system operation and control, and has published over 30 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 is a recipient of the NSF CAREER Award in 2012. He serves as an editor for IEEE Transactions on Power Systems, IEEE Power Engineering Letters, and the Journal of Electric Power



Components and Systems.

**Mr. Shinji Fujiwara** joined Hitachi, Ltd., Tokyo in 1990 where he was engaged in research and development of relational database system.



Mr. Fujiwara is now a chief engineer of database department of Hitachi Ltd., IT platform division Group.

**Allen R. Goldstein** is currently working in the electrical power synchro metrology lab at the National Institute for Standards and Technology.



Since resigning his commission as a Naval Submarine Officer in 1987, Allen has led the formation of international electronics standards while also designing products which comply with these emerging standards. Allen has been involved with Musical Instrument Digital Interface (MIDI), the Digital Audio Interface standard (IEC 60968/AES3), Digital Video Disk (DVD), Firewire (IEEE 1394), Personal Video Recording systems, and Phasor Measurement for the Electrical Power System (IEEE C37.118). Allen is currently chairman of the IEEE Conformance Assessment Program (ICAP) Synchrophasor Conformance Assessment Steering Committee, vice chair of the joint IEEE/IEC Synchrophasor Working Group (IEEE PSRC H11) and vice chair of the working group for mapping between IEEE C37.118 and IEC 61850 90-5 (IEEE PSRC H21).

**Jose Gracia** manages Oak Ridge National Laboratory's Electricity Delivery R&D Portfolio. Technology areas include Power System Operations, Advanced Power System Controls, Synchrophasor Measurement Systems, Online Model Calculations, Integration of Distributed Energy Resources and Storage, Ancillary Services, and Power System Visualization.



Prior to joining ORNL, Mr. Gracia headed several line management organizations at Tennessee Valley Authority. Mr. Gracia led a \$155 million, four-year initiative that secured the control system, deployed real-time advanced applications for power system management, upgraded the meter data management system, and developed customized user interfaces for power system operators. It also deployed revenue-quality metering at all power generating stations, interchange facilities, and key customer delivery points.

**Erich W. Gunther** – **IEEE Fellow** is the Chairman, Chief Technology Officer, and co-founder of EnerNex Corporation in Knoxville, Tennessee where he helps EnerNex clients define their strategic direction in basic R&D, technology, and product development.



Erich has 30 years of experience in the design and development of innovative solutions to a wide array of power system problems, most notably in ways to take advantage of communications networks and technology to improve the efficiency, operating practices, and security of the electric power system.

In 2004, Erich was appointed to the U.S. Department of Energy (DOE) GridWise Architecture Council for which he now serves as a member and chairman emeritus. The council is a team of experts assembled to articulate the guiding principles that constitute the architecture of a future, highly interoperable, intelligent, energy system.

Erich and his team at EnerNex were recognized at the 2007, 2008, and 2010 GridWeek conferences by receiving the GridWeek Smart Grid Award for "Smart Grid Implementation and Deployment Leadership" and was named by GreenTech Media in their 2010 and 2012 Networked Grid 100 list of Movers and Shakers in the Smart Grid, and by FierceEnergy in 2011 as one of the "Fierce 15 Power Players" for Innovation and Industry Leadership. Erich received his BSEE from Gannon University in 1980 and his Master of Engineering degree in Power Engineering from Rensselaer Polytechnic Institute in 1984. He is a registered professional engineer in the state of Tennessee, a licensed private helicopter and fixed wing pilot, commercial radiotelephone and ship radar operator, and an amateur radio operator (WG3Q).

**James Gotesky** is a Senior System Dispatcher at PG&E assigned to special projects. Jim has 25 years working with DCS and PLC automation control systems in the power, steel, auto, and oil industry in addition to Power system operations.

**Gene Henneberg** is a Staff Protection Engineer at NV energy in Reno, NV. Gene received the BSE from Walla Walla College in 1973 and MSEE from Washington State University in 1977. Gene has over 35 years experience in Transmission Planning, substation construction and maintenance, and System Protection and has been active for over 20 years in EHV protection and SPS/RAS design. He participates on several Western Electricity Coordinating Council (WECC) committees, including as Chair of the Remedial Action Scheme Reliability Subcommittee. Gene received the WECC Outstanding Contribution Award for 2013. He is a senior member of IEEE and active participant in the IEEE Power System Relaying Committee. Gene has authored or co-authored several conference papers. He is the Chair of the NERC standard drafting team tasked with revision of the NERC SPS standards.



**Dr. Roger King - IEEE Fellow**, is the Director of the Center for Advanced Vehicular Systems (CAVS). Dr. King is a William L. Giles Distinguished Professor and holds the CAVS Chair in Engineering within the Bagley College of Engineering at Mississippi State University (MSU). CAVS vision is to be a world-class center of excellence for research, technology and education utilizing high performance computational resources and state-of-the-art analytical tools for modeling, simulation, and experimentation. With his broad background in engineering research he is often engaged to offer thought provoking talks regarding the future direction of engineered systems and power systems in particular.



Dr. King is Vice-Chair for Workforce Development of the State of Mississippi Connect Coalition and serves on the Board of Directors for the Mississippi Automotive Manufacturers Association and the Mississippi Energy Institute. Dr. King is also active in NATO's Science and Technology Organization. He has received numerous awards for his research including the Department of Interior's Meritorious Service Medal. Over the last 40 years, Dr. King has served in a variety of leadership roles with the IEEE Industry Applications Society, Power and Energy Society, and Geosciences and Remote Sensing Society and is a registered professional engineer in the state of Mississippi. Dr. King also is an Honorary Professor at the Cardiff University in the United Kingdom. He has published over 250 papers and holds 4 patents.

**Dr. Yutaka Kokai** joined Hitachi, Ltd., Tokyo in 1981 where he was engaged in research and development of EMS/SCADA and on-line transient stability control systems. He is now a vice president of Infrastructure Projects Office of Hitachi America, Ltd., New York.



**Sharma Kolluri** is currently the Manager of Transmission Planning at Entergy, and has over 30 years of experience in Planning and Operations. His main areas of interest are power system planning, operations, voltage and dynamic stability and reactive power the voltage stability area.



**Steven A. Kunsman** Vice-President and General Manager, ABB Power Systems - Substation



Automation Products North America is an active member of the IEEE Power Engineering Society PSRC including past working group chairperson for H13 working on cyber security, an IEC TC57 US delegate in the development of the IEC61850 communication standard and UCA International Users Group Executive Committee co-chairperson.

His areas of expertise include: 30 years experience in substation automation, protection and control applications, communications technologies (IEC 61850 and DNP), cyber security for substation automation, and Relion product family of protection and control relays.

**Gregg Lemler** is Vice President of Transmission Operations with nearly 30 years of experience at



PG&E . Mr. Lemler has worked in various capacities, leading the Electric Transmission Operation, managing the San Francisco Bay power plants, Helms Pumped Storage and other hydroelectric facilities. He has held director positions in design and protection engineering, planning, asset management, maintenance, construction and project management at the electric transmission, substation and distribution levels. Other areas of experience include customer service, community relations, regulatory relations and gas distribution.

Mr. Lemler holds an engineering degree from the University of Wisconsin, Madison and a master in business administration from California State University, Fresno. He is a registered engineer in the state of California

**Ramon Leon** is currently Senior Executive for new business development at XM S.A. (an affiliate of



Grupo ISA), in charge of the design and structuring of new business opportunities for the company, based on the advanced management of real-time systems and market platforms. He has 16 years of experience in the strategic planning of energy systems, the management of research and development projects, and the structuring of corporate entrepreneurship projects based on innovation. Mr. Leon is also a member of the advisory board of the Colombia's National Research Program on Energy and Mining.

Mr. Leon is an Electrical Engineer from Universidad Tecnológica de Bolívar and has a Masters Degree in Electrical Engineering from Iowa State University. He also has a Certificate in Modern Power System Protection from the University of Wisconsin-Madison and a Certificate in Operations Research from Universidad Nacional de Colombia. He is a Fulbright-Colciencias scholarship recipient and a senior member of the Power and Energy Society of the IEEE.

**Eric MacDonald** is the Manager of Packaged Solutions for GE Digital Energy. He leads a business



dedicated to commercializing combinations of application engineering and existing Substation Electronics to make solutions for which there is value beyond the sum of the individual parts. Previous to this position Eric lead the Product Management organization for GE Digital Energy's Substation Automation products. Eric obtained a Bachelor's Degree in Electrical Engineering from Carleton University in Ottawa, Canada in 2000. He has worked as an Application Engineer for Alcatel Canada and as the Lead Substation Automation Engineer for Virelec Ltd. Eric is a licensed professional engineer in the Province of Ontario, Canada.

**Doug Macdonald** is Unit Managing Director, of Network Management Solutions for Alstom Grid North America.



Doug Macdonald joined Alstom Grid on March 25th, 2013 as the North American Unit Managing Director. Prior to joining Alstom, 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.

Prior to Vestas, Macdonald served 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 Principal Protection Engineer at Pacific Gas and Electric Co.



(PG&E) leading activities on Substation Integration & Automation, Reactive Compensation, Wide-area System Integrity Protection, Implementation of solutions to minimize impact of Geomagnetic Interference on Power Systems, and Policies & Standards. Dr. Madani is actively involved in leading and steering the electric utility industry and PG&E on technology, reliability, and development of industry standards for use in large scale production grade smart grid systems. He has been a visionary, architect, business and technical leader in charge of developing process and roadmaps for several large scale projects.

Vahid is a registered Professional Engineer with years of academics, business, and technical leadership in the Power systems field. He has worked in such diverse areas as Electrical, Instrumentation and Control Engineering including Research, Innovation, Development, and Design work associated with power generation, substation, tele-protection, transmission and distribution projects.

Dr. Madani was selected for his overall career achievements by the **Intelligent Utility** magazine as one of the TOP 12 utility champions in the large investor-owned electric utilities. His IEEE Fellow citation is in recognition for innovations and leadership in power system protection, control for wide-area systems, and modular protection automation. He is also a certified instructor for NERC reliability classes.

Mr. Madani chairs the Performance Standards within the North American Synchrophasor Initiative (NASPI), and is the co-organizer of the international annual technology and reliability (i-PCGRID) workshop held in San Francisco.

Mr. Madani is the author of more than 100 publications in refereed international journals in system automation, protection & control applications, and practical wide-area monitoring systems with advance warning and fast restorations. He is also the co-editor of the 2006 McGraw Hill year book of science technology, the 2008 Edition of International Journal of Reliability and Safety (IJRS) for InderScience Publishing, the 2011 IEEE Proceedings on Network Systems for Meeting the Energy and Environment of the Future, and the 2012 CRC Press Power System Stability and Control, Third Edition.

**Jay Mearns** is presently engaged as PG&E's Asset Program Technical Lead for Power Generation Electrical Asset Management. In this role Mr. Mearns is responsible for Arc Flash Remediation, Generator health assessments and Rewind planning, Grounding Studies and Grid Repairs, Transformer health assessments and Refurbishment/Replacement planning, and High Voltage Breaker health assessments. Mr. Mearns supports emergency repair and testing of Power Generation equipment, and represents PG&E at CEATI Hydro Plant Life Extension Group (HPLIG) functions. Prior to joining PG&E, Mr. Mearns held positions of increasing responsibility at several west coast utilities, including BPA, WAPA, PacifiCorp, Portland General, SCE and the Army Corp of Engineers Hydroelectric Design Center. Mr. Mearns holds a BS Engineering degree from San Francisco State University (1983) and is registered as a Professional Engineer (California E-12028).



**Dr. A.P. Sakis Meliopoulos** (M '76, SM '83, F '93) was born in Katerini, Greece, in 1949. He received the M.E. and E.E. diploma from the National Technical University of Athens, Greece, in 1972; the M.S.E.E. and Ph.D. degrees from the Georgia Institute of Technology in 1974 and 1976, respectively. In 1971, he worked for Western Electric in Atlanta, Georgia. In 1976, he joined the Faculty of Electrical Engineering, Georgia Institute of Technology, where he is presently a Georgia Power Distinguished Professor. He is active in teaching and research in the general areas of modeling, analysis, and control of power systems. He has made significant contributions to power system grounding, harmonics, and reliability assessment of power systems. He developed the Macrodyne PMU based harmonic monitoring system for the NYPA transmission system in the period 1993-

1998 with Dr. Cokkinides, the smart ground multi-meter which is now commercially available, the distributed state estimator technology and the dynamic state estimation based protective relay (setting-less protection). He is the author of the books, *Power Systems Grounding and Transients*, Marcel Dekker, June 1988, *Lightning and Overvoltage Protection*, Section 27, Standard Handbook for Electrical Engineers, McGraw Hill, 1993-2012, and *Applications of Time-Synchronized Measurements in Power System Transmission Networks*, (coauthors: M. Kezunovic, V. Vittal and V. Venkatasubramanian), Springer 2014. He holds three patents and he has published over 300 technical papers. Among his major awards are: in 2005 he received the IEEE Richard Kaufman Award and in 2010 the George Montefiore Award. Dr. Meliopoulos is the Chairman of the Georgia Tech Protective Relaying Conference, a Fellow of the IEEE and a member of Sigma Xi.



**Scott R. Mix**, CISSP, joined NERC in October 2006 following more than 25 years of experience working in various facets of the electricity industry, including as a consultant with KEMA, Inc., Infrastructure Security Manager with the Electric Power Research Institute (EPRI), Senior Security Analyst at the PJM Interconnection, and more than ten years with Leeds & Northrup Co. as a programmer/analyst and systems architect. For more than fifteen years, he has focused on the areas of Computer and Infrastructure Security for the Electricity Sector. At NERC, he is responsible for Critical Infrastructure Protection issues, primarily as they relate to Real Time and Control System Security, and the development of the revisions to the NERC CIP Standards. He has also been the NERC Staff Facilitator for the Critical Infrastructure Protection

Committee (CIPC) and several of its working groups and task forces. Throughout his career, Mr. Mix has worked closely with numerous industry and government organizations, including NERC's Critical Infrastructure Protection Committee (CIPC) and its working teams, and is the former convener of the Control System Security Working Group, has been an active and vocal observer to the NERC Cyber Security Standards Version 1 Drafting Team (and the NERC 1200 process before that), and is a former member of the OASIS "How" Working Group. He has also worked DOE, DHS, the FBI's National Infrastructure Protection Center, and the FERC dealing with specific Electric Sector Security Issues. He has organized and presented at numerous industry symposia, both domestically and internationally. He is a Certified Information Systems Security Professional (CISSP). Mr. Mix is a graduate of the Bloomsburg University of Pennsylvania with a Bachelor of Science degree in Computer & Information Science and Chemistry.



**Dr. Thomas Morris** – Director of the Critical Infrastructure Protection Center (CIPC) and at Mississippi State University (MSU). He is also a faculty member for the Center for Computer Security Research (CCSR) at MSU, and is active researcher in the industrial control system and Smart Grid cybersecurity domain.



Dr. Morris works to develop control system vulnerability and exploit taxonomies which are used to in control system cybersecurity solutions. His research has led to the development of a control system network traffic data logger to support post incident forensic analysis and the development of a security retrofit architecture for adding intrusion detection and authentication features to legacy control systems. He has also created a Private Computing on Public Platforms (PCPP) system called. PCPP encapsulates and isolates applications from all other processes running on the same platform, including isolation from processes executing with root or supervisor

privileges.

Prior to joining MSU, Dr. Morris worked at Texas Instruments (TI) for 17 years in multiple roles including circuit design and verification engineer, applications engineer, team leader, and program manager.

Dr. Morris received his Ph.D. in Computer Engineering at Southern Methodist University in Dallas, TX with a research emphasis in cyber security.

**Paul Myrda** is a Technical Executive with the Electric Power Research Institute working in the Power Delivery and Utilization Sector. Currently he is program manager for the Information and Communications Technology for Transmission. In this role Paul facilitates activities across the EPRI organization related to transmission Smart Grid. He is also responsible for the future looking Grid Transformation project investigating the needs of the next generation EMS and also protection systems. Paul is also involved in cyber security activities as an External Advisory Board (EAB) member of the Trustworthy Cyber Infrastructure for the Power Grid (TCIP-G) Center. Paul represents EPRI on the Industrial Advisory Board for the Power Systems Engineering and Research Consortium and the Center for Ultra-Wide-Area Resilient Electric Energy Transmission Networks (CURENT).



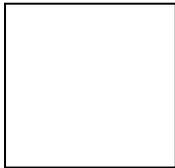
Previously, Paul was Director of Operations and Chief Technologist overseeing planning and asset management functions for Trans-Elect's operating companies. He championed an innovative protection and control system upgrade project for the Michigan Electric Transmission Company an affiliate of Trans-Elect. This project fully leveraged the capability of IEC 61850, physical security, telecommunications and data warehousing technologies using EPRI's Common Information Model.

Paul has over 35 years of experience including leading edge technology implementations. His diverse background includes planning, engineering, information systems and project management. He has an MBA from Kellogg (2000) and MSEE and BSEE from Illinois Institute of Technology (1980 and 1977, respectively). He is a licensed professional engineer, and an active member of CIGRE and senior member of the IEEE.

**Dr. Damir Novosel, IEEE Fellow**, is the 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. Damir is elected to National Academy of Engineers in 2014. Dr. Novosel is IEEE PES President Elect. He served as chair of the PES Technical Council, vice president of technology, and a member of the PES Governing Board from 2010 to 2012. Damir is also member of the CIGRE US National Committee Governing Board. His work in automation and electrical power system monitoring, protection, and control has earned him international recognition and was elected IEEE Fellow. Damir holds 16 US and international patents and published over 100 articles in Transactions, Journals and Proceedings, receiving PES 2011 and 2013 Prize Paper Awards. He has led or participated in numerous IEEE standards, publications and other initiatives. Damir holds PhD and MSc degrees in electrical engineering from Mississippi State University, where he was a Fulbright scholar, and the University of Zagreb, Croatia. He is an adjunct professor of electrical engineering at North Carolina State University.



**Jamie Ormond** is the lead analyst of the interconnection proceeding at the California Public Utilities Commission in San Francisco. Ms. Ormond earned her J.D. at Santa Clara University School of Law, where she participated in the national environmental law moot court competition at Pace Law School and where she initiated the first annual environmental law symposium.



Prior to attending law school, Ms. Ormond travelled around Southeast Asia and Nepal, where she learned about renewable energy businesses in developing countries. A native of Detroit, Ms. Ormond graduated from McGill University in Montreal with a degree in international political economy.

**Dr. David Ortiz** is Deputy Assistant Secretary for Energy Infrastructure Modeling and Analysis (EIMA) in the Department of Energy's Office of Electricity Delivery and Energy Reliability. The EIMA Division supports cutting-edge research and development that is focused on enabling new ways of delivering and managing electricity for a reliable, secure, resilient, and advanced U.S. energy infrastructure. The Division's activities include advanced modeling and visualization, energy infrastructure risk analyses, reliability assessments, and synchrophasor-based tool development. Prior to joining OE, Dr. Ortiz was a Senior Engineer and Policy Analyst at the RAND Corporation and a professor at the Pardee-RAND Graduate School. At RAND, Dr. Ortiz built a multi-million dollar program of research and analysis in energy technology and policy.



In 2006, in response to hurricanes Katrina and Rita, he led the RAND team that demonstrated a new approach to coastal planning for the U.S. Army Corps of Engineers and the State of Louisiana. The State of Louisiana subsequently adopted the approach, using it to develop its 2012 Louisiana Master Plan for a Sustainable Coast. In support of the 2012 Master Plan, David led a team of RAND researchers and modelers to develop a flood risk model.

David earned the Ph.D. degree from the University of Michigan in Electrical Engineering in signals and systems. He graduated cum laude from Princeton University, earning the B.S.E. degree in Mechanical and Aerospace Engineering. David is a member of IEEE, the IEEE Control Systems Society, and the IEEE Power and Energy Society.

**Dr. Manu Parashar** is a Corporate Power Systems Engineer at ALSTOM Grid Inc in Redmond, WA, where he is leading the research and development of ALSTOM's Online Stability Solutions (OSS), including synchrophasor applications, and is directly involved in delivering these applications to the North American customers.



Prior to joining ALSTOM, 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 actively involved 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.

**John Randolph** is a Principal Engineer at PG&E working in substation standards, asset strategy, and project design for PG&E since 1984. He is the Past Chair of IEEE/PES Substations Committee, and is now the US representative for CIGRE Study Committee B3 Substations. John received his BSEE from Cal Poly State University, San Luis Obispo, CA in 1983, with an emphasis in power engineering.

**Gert Rietveld** has a Ph.D. degree in solid state physics from the Delft University of Technology, The Netherlands. Since 1993, he works as senior scientist at VSL, the Dutch National Metrology Institute, where his main research interests are electrical quantum standards, especially the quantum Hall resistance standard, and power and energy measurements, including on-site precision power measurements and PMUs.



He recently has coordinated 22-partner European research project on Smart Grid metrology. He is an active member of the IEEE both within the I&M society and the PES, where he is among others member of the working groups related to PMU standardization.

**Vic Romero** is the Director of Asset Management and Smart Grid Projects for San Diego Gas & Electric. Vic is responsible for SDG&E's Distribution Planning, T&D Asset Management Technical Analysis, R&D Projects and implementing key SDG&E Smart Grid Projects, including OMS/DMS, Condition Based Maintenance for Substations, and the Borrego Springs Microgrid Project. He has 36 years of utility experience, primarily working in Distribution, Transmission, and Substation construction, maintenance, and operations. He has also worked in Distribution Planning and Distribution Engineering. He is a Registered Professional Electrical Engineer in the State of California.



**Shreevardhan A. Soman** is a Professor in department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai India. He obtained PhD from Indian Institute of Science Bangalore, India in 1996. His area of interests are power system protection, PMU analytics, optimization, power system analysis and electricity markets. He has authored a book Computational Methods for Large sparse power system analysis : An object oriented approach. He works closely with distribution and transmission companies in India and regulators towards fostering academia-industry interaction.

**Dr. Dejan J Sobajic**, is the President and Founder of Grid Consulting LLC from San Jose, CA. He has over markets operations, control-center technology, operator training and IT design. His areas of expertise include SCADA/EMS design and real time system applications development; power system modeling, stability and control, and intelligent systems applications.



Dr. Sobajic has 14 years of academic experience including the appointments at Case Western Reserve University and Stanford University. In 1988 he pioneered the use of neural net technology in the field of power system engineering. Dr. Sobajic has edited the first textbook on the subject of use of neuro-computing in power system engineering entitled “Neural Network Computing for the Electric

Power Industry”(1993).

He is the Chairman of the International Steering Committee for the International Workshop on Electric Power Control Centers – EPCC ([www.epcc-workshop.net](http://www.epcc-workshop.net)). Dr. Sobajic is IEEE Fellow and Member of CIGRE. He is the author/co-author of over 100 technical papers in power system analysis, stability, system operation and markets, control and computational intelligence. He can communicate in English, Russian, German and Serbian language.

**Bob Stuart** has 45 years of engineering, operation and protection experience with electric production, transmission, systems protection and control and substation design. He is a recognized expert in transmission system operation and system protection design and application for generation, transmission and distribution. Mr. Stuart retired as Manager of Operations Engineering from PG&E after thirty-five years in April of 2004. During his distinguished PG&E career, he led major initiatives in system protection, transmission operation, control, and disturbance analysis.



Throughout his career, Mr. Stuart has been an innovator and has successfully championed the application of microprocessor technology for system protection and in the use of fault tolerant remedial action schemes. While working at PG&E,

Mr. Stuart was involved in several projects related to power system reliability, design and review of protection standards and has led the effort to design and implement special protection and remedial action schemes to prevent blackouts. He was responsible for the development of unique operating procedures utilizing the dispatch of generation for San Francisco Bay Area reliability and helped in the development of PG&E’s three stage electric emergency plan.

Mr. Stuart served as the transmission team lead for the North American Electric Reliability Council (NERC) in investigating the August 14<sup>th</sup> 2003 NE Blackout which interrupted power to 60 million people in the Northeastern part of the United States and Canada. Mr. Stuart also chaired an operating capability study group, after the August 10<sup>th</sup> blackout on the Western grid in 1996 that developed the methodology and procedures to restore the reliable operation of the Western United States electrical grid. He won the WECC outstanding contributor award for his work on that committee.

**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. Over the years at PG&E, he worked in 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 many 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 drafting and issuance of the first complete set of PG&E generator interconnection requirements in 1984. He also designed the electrical system including the control logic for an R&D 125 kW Turbo-expander induction generator in the early 1990's and 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 inverters were developed over 10 years ago.

He is currently 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.

**Jonathan Sykes** is the Senior Manager of System Protection at Pacific Gas and Electric Company in San Ramon, California. Jonathan graduated from the University of Arizona in 1982, is a Professionally Licensed Electrical Engineer, and has more than 30 years of engineering experience in System Protection and working for industry. He participates on several committees in the Western Electric Coordinating Council and is past Chairman of the North American Electric Reliability Corporation System Protection and Control Subcommittee. 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.

**Bernard Tatera** received his BS in electrical engineering from the California Polytechnic State University SLO in 1986 and his Master's Degree in Electrical Engineering from Santa Clara University in 1995. Bernard has 28 years of experience in the electric utility industry, working at Pacific Gas & Electric for 24 of those years. He has knowledge and experience in telecommunications, SCADA, system protection, and power quality. He is a member of IEEE, the International Society of Automation (ISA) and is a registered Professional Engineer in the state of California.



**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** - Senior Manager, Substation Test has 29 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 Member of IEEE.

**Demetrios Tziouvaras** is an industry recognized leader, technical expert, and educator. Demetrios has 34 years of experience in the electric utility industry. He is a technical expert in the areas of power system protection and control, wide-area system integrity protection systems, power system transients, real-time digital simulation, and electromagnetic transient program modeling. In 1998, he joined Schweitzer Engineering laboratories, Inc (SEL), where he researches new protection and control algorithms, contributing to the design and development of advanced numerical relay products. In 2013, he joined the SEL University where he teaches power system protection and application courses, develops new courses, and maintains his involvement in research and development activities.



From 1980 until 1998, Demetrios was with Pacific Gas and Electric Co. (PG&E), where he held various protection engineering positions, including Principal Protection Engineer. While at PG&E, he evaluated new technologies and led the development of design standards to protect and automate PG&E's HV and EHV electric power system. He was a lead engineer for the design of the Pacific Intertie Remedial Action Scheme and for the 500 kV relay replacement projects to replace aging solid-state relays with modern single-phase tripping and reclosing relays. Demetrios received PG&E's Wall of Fame Award four times for exemplary leadership and teamwork in restoring the damaged 500 kV network after the 1989 earthquake, for leadership in design, testing, and commissioning of the 500 kV California-Oregon Transmission Project, and twice for his leadership and technical expertise in analyzing major power system disturbances and for implementing system protection design changes to improve the 500 kV network reliability.

Currently, Demetrios is an executive committee member of the U.S. National Committee of CIGRE. He is an IEEE senior member and a member of the Power Engineering Society, the Power System Relaying Committee, and CIGRE. He is actively involved in many CIGRE and IEEE working groups developing national and international standards, guides, and technical reports. Demetrios has made substantial contributions in the field of power system protection. He is the author or coauthor of more than sixty IEEE and Protective Relay Conference papers. In 2011, he received the IEEE PES Prize Paper Award for an IEEE PSRC report. He is a coauthor of the SEL book on Modern Solutions for Protection, Control, and Monitoring of Electric Power Systems. He holds four patents in the area of power system protection and has several patents pending.

**Alfredo Vaccaro** is an Assistant Professor in electric power systems and scientific Director of the bureau of the Research Center on Pure and Applied Mathematics at the Department of Engineering of the University of Sannio, Benevento, Italy. His special fields of interest include soft computing and interval-based method applied to power system analysis and advanced control architectures for diagnostic and protection of distribution networks. Prof. Vaccaro is the an Associate Editor of IET Renewable Power Generation, the International Journal of Reliability and Safety, and the International Journal on Power System Optimization.



**Mark G. Walker**



received his BSEE from Cal Poly University, Pomona (1990), and his MSCompEng from the University of Southern California, Los Angeles, CA (1994), where he specialized in machine intelligence. His technical career actually started in 1977 when he served as a Naval Nuclear Reactor Operator onboard cruiser U.S.S. Long Beach, CGN-9. Since then he has enjoyed a long and diverse career, working as a journeyman electrician, an instrumentation technician for an automobile crash test facility, and as a software and firmware engineer for various companies. He built tactical graphics workstations for the U.S. Navy while with Hughes Ground Systems Group, designed satellite attitude and payload control software for Hughes Space and Communications, and applied artificial intelligence algorithms (co-authoring 4 patents in the field) for F-35 health and usage monitoring while with BFGoodrich Aerospace. His work in applied artificial intelligence began in 1989 as a DOE undergraduate fellow at Oak Ridge National Laboratory, where he developed computer vision algorithms for autonomous robots. He also spent 6 years as Senior Consulting Engineer for expert system manufacturer Gensym Corporation and 10 years as Lead Engineer, Intelligent Systems for General Atomics, where he led GA in the development of reusable Prognostic and Health Management systems applied to the energy industry. He continues to serve as a NASA Subject Matter Expert in Integrated Systems Health Management, with projects at Stennis and Kennedy Space Centers. Most recently he joined expert system manufacturer UReason, where he is employed as Applications Specialist, Reasoning Systems. He resides with his family in Oceanside, California.

**Solveig Ward**, *IEEE Fellow, Principal Advisor – Automation, Communications Specialist*, has more than



35 years of experience in design and applications of Protective Relaying and Communications. She has published and presented more than 30 papers at relay conferences and has written several magazine articles. Solveig is presently involved in a wide variety of projects, including IEC 61850, synchrophasors, wide area protection and protective relay philosophy and coordination.

Solveig can be contacted at [sward@quanta-technology.com](mailto:sward@quanta-technology.com)

**Dr. Chuck Wells**



is OSIsoft's visiting scholar at UCSD. He has over thirty years of experience in real-time control and monitoring, published over fifty technical papers, awarded ten US Patents, and co-authored two textbooks. At UCSD he is involved in microgrid research involving phasor measurement units (PMU) as applied to control and monitoring. Working with UCSD faculty members, he applied innovative new methods for real time event detection and on-line parameter identification. He led a new data mining project that includes anomaly detection algorithms developed using Big Data Analytic (BDA) tools taught at university (550 Gbytes of historical data). This work was done on the San Diego Super Computer Hadoop cluster. The software tools used included methods published by UCSD faculty. He is also working with multiple energy storage systems on campus providing peak shifting and regulation functions. He has worked in steel, paper, power systems, waste water, food processing and transportation systems. He has a PhD in Electrical Engineering, Masters and Bachelor's degrees in Chemical Engineering and is registered Professional Engineer in Chemical and Control Systems Engineering.

**Ken Wells** first 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.

**John R. Wulf** - Corporate Project Manager Alstom Grid, Inc. Alstom Grid Corporate Project Manager for 17 Years.



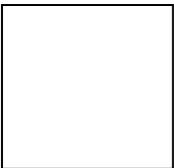
Prior to joining Alstom, John was a Senior Manager at Snohomish PUD and has held various management positions at PNNL, PacifiCorp and PNB. John is a member of the FERC and NERC working groups including 888 and 889, and has chaired the Desert Southwest OASIS committee - Information Network Work Group, Electric Power Research Institute, and the Network Subcommittee, Western State Coordination Council. John is a Member of Marylhurst College Information Technology Curriculum Committee, and the Board Member on the State of Washington Licensing Board Department of Health.

John holds a BS and MBA degrees - , Plus various Certificates in Advanced Communication Systems from AT&T, Bell Labs, Network Engineering School and a Program Management Certificate from

**Steve Yang** is with the Bonneville Power Administration where his responsibilities include test and measurement systems, generator performance monitoring, testing and model validation. Mr. Yang received his M.S. degree in Electrical Engineering from Portland State University in 2002. He has led the end-use equipment testing program at BPA. He is a member of the WECC Modeling and Validation Work Group and WECC Load Modeling Task Force.



**Ali Yari** is director of electric grid operations for San Diego Gas & Electric (SDG&E). SDG&E is a regulated public utility that provides service to 3.4 million consumers through 1.4 million electric meters and more than 860,000 natural gas meters in San Diego and southern Orange counties. As director of electric grid operations, Yari is responsible for operating the electric transmission grid to ensure the delivery of safe and reliable energy. Yari has thirty-years of experience in power system operations, planning, engineering, power education, research, and management. He is a graduate of the University of Texas with a bachelor's degree and master's degree in electrical engineering. Yari is a part-time professor and has taught power engineering courses at San Diego State University. Yari is a registered Professional Electrical Engineer in the state of California.



**Dr. Nicolas H. Younan** is currently the Department Head and James Worth Bagley Chair of Electrical and Computer Engineering at Mississippi State University. He received the B.S. and M.S. degrees from Mississippi State University, in 1982 and 1984, respectively, and the Ph.D. degree from Ohio University in 1988. Dr. Younan's research interests include signal processing and pattern recognition. He has been involved in the development of advanced signal processing and pattern recognition algorithms for data mining, data fusion, feature extraction and classification, and automatic target recognition/identification.



Dr. Younan has published over 250 papers in refereed journals and conference proceedings, and book chapters. He has served as the General Chair and Editor for the 4<sup>th</sup> IASTED International Conference on Signal and Image Processing, Co-Editor for the 3<sup>rd</sup> International Workshop on the Analysis of Multi-Temporal Remote Sensing Images, Guest Editor, Pattern Recognition Letters, and JSTARS, and Co-Chair, Workshop on Pattern Recognition for Remote sensing (2008-2010). He is a senior member of IEEE and a member of the IEEE Geoscience and Remote Sensing society, serving on two technical committees: Image Analysis and Data Fusion, and Earth Science Informatics (previously Data Archive and Distribution). He also served as the Vice Chair of the International Association on Pattern Recognition (IAPR) Technical Committee 7 on Remote Sensing (2008-2010), and Executive Committee Member of the International Conference on High Voltage Engineering and Applications (2010-2014).



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.