

Mark Adamiak - IEEE Fellow, Mark Adamiak is the Director of Advanced Technologies for GE Grid Automation and is responsible for identifying and developing 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 member of the US National Academy of Engineering, 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.

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.

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 since 1988.



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

XM is a company responsible of operating the National Interconnected System and managing the wholesale power market in Colombia.

William O. (Billy) Ball is the Executive Vice President and Chief Transmission Officer of Southern Company Transmission – He is responsible for the planning, design, construction, operation, and maintenance of Southern Company's transmission system. Billy is actively involved in electric utility industry policy matters. He currently serves on the Eastern Interconnection Planning Collaborative Executive Committee, National Institute of Standards and Technology (NIST) Smart Grid Federal Advisory Committee (SGFAC), Department of Energy Electricity Advisory Committee, Consortium for Electric Reliability Technology Solutions (CERTS) Industry Leadership Council, and the North American Transmission Forum, where he is past Chairman.



Prior to his current position, Billy was Senior Vice President, Transmission Design and Construction. From 2004 to 2008, he was Senior Vice President, Transmission Planning and Operations, and was responsible for the planning and operations of the Southern Company's network transmission grid, transmission policy and industry interfaces. While in this role, he served as Vice Chairman of the Board of the Southeastern Electric Reliability Council, and Chairman of the North American Electric Reliability Council Members Representative Committee.

Billy's previous experience includes positions at Mirant (formerly Southern Energy) where he was responsible for technical due diligence on business development projects, transmission and O&M support to the various business units, and establishing and implementing safety and health policy at Mirant. He also held the position of Manager, System Planning, with both generation and transmission planning responsibilities at Mississippi Power, and played a key role in the development and certification of the company's 1,100 MW combined cycle facility at Plant Daniel. He served as Mississippi Power's technical witness in numerous regulatory hearings.

Billy is a native of Columbia, Mississippi. He is a Summa Cum Laude graduate of Mississippi State University (MSU) with a bachelor degree in Electrical Engineering and holds an MBA from the University of Southern Mississippi. He serves on the Board of Briarwood Christian School, is a Distinguished Fellow of the Mississippi State University James Worth Bagley College of Engineering, and serves on the MSU Dean's Advisory Council. Billy is a registered professional engineer in Mississippi.

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.

Terry Boston is president and CEO of PJM Interconnection. Mr. Boston has served for four years as CEO of PJM Interconnection, the largest power grid in North America and electricity market.



Mr. Boston also is president of GO 15, the association of the world's largest power grid operators. He also serves as a U.S. vice president of the International Council of Large Electric Systems (CIGRE) and as vice president of the Consortium for Electric Reliability Technology Solutions. Prior to joining PJM, Mr. Boston was the executive vice president of the Tennessee Valley Authority's (TVA) power system operations. In his 35 years at TVA, Mr. Boston directed divisions in transmission and power operations, pricing, contracts and electric system reliability. He served three years as chairman of the Southeastern Electric Reliability Council Board and serves on the boards of non-profits such as the Association of Edison Illuminating Company, Electric Power Research Institute (EPRI) and Grid Protection Alliance.

Mr. Boston is the past chair of the North American Transmission Forum, dedicated to excellence in performance and sharing industry best practices. He was one of the eight industry experts selected to direct the North American Reliability Corporation (NERC) investigation of the August 2003 Northeast/Midwest blackout.

In 2011, Mr. Boston was honored with the "Leadership in Power" award from the IEEE Power and Energy Society. He also was chosen by Intelligent Utilities Magazine as one of the Top 11 Industry Movers and Shakers, and led PJM to win Platts Global Energy Awards in Industry Leadership 2010 and Excellence in Electricity in 2012.

Mr. Boston holds a Bachelor of Science in engineering from Tennessee Technological University and a Master of Science in engineering administration from the University of Tennessee.

Mr. David A. Bradley is the Manager of Technology Application for PG&E's Applied Technology Services Section. He is responsible for electrical testing and analysis and technology performance testing associated with PG&E's utility system.



Mr. Bradley joined PG&E in 1980 and has held a variety of Engineering and Operating positions. He has over 20 years of experience as a Distribution and Transmission Engineer and supervisor. He has also served as PG&E's Manager for its Vegetation Management program, and Manager for New Customer Connections. He has a total of 32 years of utility operations background.

Mr. Bradley leads a section composed of over 50 engineers, scientists and technicians. He is responsible for a High Voltage Test Dome capable of 720,000 volt testing and a High Current Test Yard capable of testing to 80,000 amps. Numerous projects have been completed including equipment testing and acceptance, event recreation, and incident investigations. Mr. Bradley's unit has experience in Distributed Generation equipment and integration as well as data acquisition projects.

Mr. Bradley holds a B.S. degree in Electrical Engineering from the South Dakota School of Mines & Technology in Rapid City, SD. He is a registered Professional Engineer in the state of California. He is a member of the IEEE – Power Engineering Society

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.

Dr. Anjan Bose IEEE Fellow is a Senior Advisor to the Under Secretary US Department of Energy. Dr.



Bose is Regents Professor and the Distinguished Professor of Electric Power Engineering at Washington State University in Pullman, Washington, where he also served as the Dean of the College of Engineering & Architecture from 1998 to 2005. He is a leading researcher on the operation and control of the electric power grid. He has worked in the electric power industry as well as academe for over 40 years.

Dr. Bose is a Member of the US National Academy of Engineering, a Foreign Fellow of the Indian National Academy of Engineering and a Fellow of IEEE. He is the recipient of the Outstanding Power Engineering Educator Award, the Third Millennium Medal, and the Herman Halperin Electric Transmission & Distribution Award from the IEEE. He has been recognized by both Iowa State University and the Indian Institute of Technology with their distinguished alumnus awards. He has served on several editorial boards and on many technical committees and conference organizations. He was appointed by the governor to the board of directors of the Washington Technology Center, and by the US Secretary of Energy on the committee to study the 1999 and 2003 power blackouts. He has served on several committees of the US National Academies including those for Engineering Education, Cybersecurity Research, Power Grid Security and America's Energy Future. He has consulted for many electric power companies and related government agencies throughout the world.

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. He manages a team of professionals who develop and administer technology research and development for California's future electric transmission system. This work is largely funded by the California's Public Interest Energy Research Transmission Research Program at the Energy Commission. He also manages the Sacramento office for CIEE, which is headquartered in Oakland, CA.



Merwin Brown, Electric Grid Program Director, manages a team of experts at CIEE who are helping develop and commercialize new technologies for the modern electric grid needed to meet California's aggressive energy-policy goals. The team develops, administers, and conducts R&D programs for reliable, safe, affordable, and environmentally sound transmission and distribution systems.

Merwin'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. He has managed private and public-interest technology R&D programs valued at up to \$50 million per year with groups as large as 100 scientists and engineers. He has managed individual R&D projects as large as \$20 million.

Merwin has extensive training and experience in strategic business planning and has held advisory positions for many electricity industry organizations. He has served as an Arizona Solar Energy Commissioner, on the Board of the American Council for an Energy Efficiency Economy, and with groups from the Electric Power Research Institute and the National Renewable Energy Laboratory.

He 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>.

Dr. J. Patrick Donohoe - Senior IEEE Member is a professor at the Department of Electrical and Computer Engineering at Mississippi State University. His primary research interests include computational electromagnetics, radar, electromagnetic compatibility, electromagnetic properties of composite materials, 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.

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. Ratan Das - Senior IEEE Member is a Sr. Principal Engineer with over thirty years of experience in the protection and automation of power systems. He is a Senior Principal Engineer at ABB where he is working for fifteen years, and a member of ABB's International Team of Experts focusing in distribution automation.



Dr. Das specializes in fault location, high impedance fault detection and, equipment and system performance/failure analysis. He has a strong background in power system modeling and simulation. Ratan also worked for NTPC Limited, India for eleven years in the area of protection of large generators and EHV transmission system, before joining the power system research group at the University of Saskatchewan in 1992

Ratan is the chair of IEEE PSRC Working Group H4 - revising the IEEE C37.111 (COMTRADE), to be published soon jointly by IEEE and IEC. He is a main committee member of the IEEE PSRC, a senior member of IEEE, a member of CIGRÉ and a registered professional engineer in the Province of Saskatchewan, Canada. He holds three patents and has published twenty papers. Ratan completed his BEE from Jadavpur University, Kolkata, India and received his M.Sc. and Ph.D. degrees in EE from University of Saskatchewan, Saskatoon, Canada.

Dr. Jay Giri – IEEE Fellow is the Director, Power Systems Technology and Strategic Initiatives at AREVA T&D in Redmond, WA. In 1978, he and 11 others co-founded ESCA, which after a few mergers & acquisitions, in 2004, became part of AREVA T&D Inc. He was the original designer and implementer of the ESCA AGC and DTS power system simulation software. He has a Ph.D from Clarkson University, NY and a B.Tech from Indian Institute of Technology (IIT), Madras. He is an Affiliate Professor at the University of Washington. In 2002, Dr Giri was elected IEEE Fellow; citation: "For contributions to the design and implementation of power system control centers".



Dr. Vasudev Gharpure is a *Principal Advisor at Quanta Technology*, and is the lead developer for synchrophasor based wide-area situation awareness application software and specifications. He is also involved in PMU (Phasor Measurement Unit) and PDC (Phasor Data Concentrator) applications, qualification, performance testing and standards development.



Dr. Gharpure has 30 years of industrial and academic experience in three countries. He has designed the hardware and firmware for digital and analog protection relays, a phasor measurement unit, a power system stabilizer and other real time embedded systems based industrial products. His areas of interest are in synchrophasor technology, protection and control of power systems, power electronic based utility applications such as static VAR and other FACTS based systems, embedded control applications, motor controls, numerical algorithms, automation and automated test equipment.

Prior to joining Quanta Technology, he was Consulting Design Engineer at ABB Inc., in Raleigh, North Carolina for ten years. Prior to that, he was Principal Design Engineer at Basler Electric in Highland Illinois. He has also held positions at the Virginia Tech, Virginia, USA; Singapore Polytechnic, Singapore; Eastern Peripherals, Mumbai, India and Tata Electric Companies, Mumbai India.

He is a member of IEEE, a member of the C37.118 Synchrophasor standard and C37.244 PDC Guide working groups of the IEEE. He has authored several publications.

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 Electric 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).

Armando Guzmán, Senior IEEE Member, is the Research Engineering Manager at Schweitzer Engineering Laboratories (SEL) in Pullman, Washington. He has been with SEL since 1993.



Mr. Guzmán received his BSEE with honors from Guadalajara Autonomous University (UAG), Mexico, in 1979. He received a diploma in fiber-optics engineering from Monterrey Institute of Technology and Advanced Studies (ITESM), Mexico, in 1990, and his MSEE from University of Idaho, USA, in 2002. He served as regional supervisor of the Protection Department in the Western Transmission Region of the Federal Electricity Commission (FEC, the electrical utility company of Mexico) in Guadalajara, Mexico for 13 years. He has lectured at UAG in power system protection. Mr. Guman holds several patents in power system protection and metering. He is a senior member of IEEE and has authored and coauthored several technical papers.

Dr. Bryan J. Gwyn, Sr. Member IEEE, is a Senior Director, Protection & Control Asset Management, Bryan has 30 years experience in the Power Industry, working both in the UK and US. He has held leadership positions in a large multi-national Utility and has been responsible for delivering large asset replacement programs, developing engineering standards and asset strategies. Bryan's Areas of expertise include Protection and Control, Asset Management and Replacement Strategies, Compliance with NERC Standards.



Dr. Gwyn's has more than 30 years of experience in the electric power industry and has held various leadership positions at the National Grid United Kingdom, UK. Bryan transitioned from the National Grid UK and joined the US based headquarters for National Grid in 2001. He has held several positions in the protection field, developing technical specifications and carrying out disturbance analysis on Transmission and Distribution networks, both in the US and UK. Other activities include Business Planning and R&D management.

Bryan Graduated from City University, London with focus in Power System Fault Analysis. Bryan is a Chartered Engineer and a member of the Institution of Engineering and Technology. He is also a Senior member of IEEE Power and Energy Society and Chair of the Boston PES Chapter.

Dr. Yi Hu - IEEE Senior Member, is the Director of Wide-Area Monitoring, Protection and Control at Quanta Technology.



Yi has over 25 years experience working in the electric power industry and three years in the telecommunication industry. He has contributed to the development of advanced power system protection and control systems, and design and deployment production-grade Synchrophasor systems. His recent contributions include leading the completion of the NASPInet specification development, and organizing and leading the completion of the first comprehensive PMU performance conformance certification test for eight PMUs. Dr. Hu holds 14 US patents, had published over 20 technical papers, is a senior member of IEEE and IEEE PES, active at PES Power

System Relaying Committee (chairing WG C15 and contributing to several other Synchrophasor technology related Working Groups) and the Substation Committee.

MARK JOHNSON - Vice President, Transmission Operations – PG&E



Mark Johnson is vice president of Transmission Operations for Pacific Gas and Electric Company. His current responsibilities include providing leadership and direction to the company's 24/7 Transmission Control Center operations, transmission lines and substation-related engineering/design, operations, construction, reliability, and strategy functions.

His most recent accomplishments include overseeing the consolidation of 15 remote transmission control centers into a single state-of-the-art facility. He was also asked by the Chief Operating Officer to lead and develop a plan to improve the overall operational and human performance proficiency of the transmission and distribution business. This plan will be the model to improve other aspects of the entire utility.

Prior to joining Pacific Gas and Electric Company, Johnson was director of Transmission Operations for E.ON U.S. and its subsidiaries, Louisville Gas and Electric and Kentucky Utilities.

Mr. Johnson has served in a number of officer, senior-level and management positions during his career in generation and transmission at Tennessee Valley Authority and Entergy. He has over 30 years of experience in the electric utility industry.

Johnson has a Bachelor of Science in civil engineering technology from Murray State University in Murray, Kentucky, and has successfully completed the Darden School of Business Executive Program at the University of Virginia.

Dr. Roger King - IEEE Senior Member, 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. As the Director of CAVS, King is responsible for an interdisciplinary research center comprised of engineering, research, development, and technology transfer teams focused on enhancing human and payload mobility. 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 a member of the Executive Committee of Southern Growth Policy Board's Southern Advanced Materials in Transportation Alliance (SAMTA) and serves on the Board of Directors for the Mississippi Automotive Manufacturers Association and the Mississippi Energy Institute.

Dr. King has received numerous awards for his research including the Department of Interior's Meritorious Service Medal. Over the last 30 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 and is a registered professional engineer in the state of Mississippi. At Mississippi State University, he holds the academic rank of William L. Giles Distinguished Professor in the Department of Electrical and Computer Engineering. Dr. King also is an Honorary Professor at the Cardiff University in the United Kingdom. He has published over 200 papers and holds 4 patents.

Gregg Lemler is Gregg Lemler is Senior Director of Electric Transmission System Operations with nearly 30 years of experience at PG&E. Lemler has worked in various capacities, including 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.



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

Hubert Lemmen is the Chief Innovation Officer at Elia Group –



He began his career in 1977 as Engineer for the UKEC, a Belgian electricity company. In 1980, he joined EBES, another electricity company, as Engineer. He became employed with Electrabel when it merged with EBES in 1990. He joined Elia since its inception and has held different positions i.e. Head of the Department Network Management, Chief Officer Transmission and Chief Officer Grid Services.

In 2003 he joined the Elia Management Board.

Since 2006, Hubert Lemmens has been the coordinator of the European Wind Integration Study. He was also deeply involved in the set-up of the European Electricity Grid Initiative, the Grid part of the Strategic Energy Technology plan of the European Commission. Since November 2010, he is in charge of the Innovation and Knowledge Management division of the Elia Group and chairs the Entso-e Research & Development Committee.

Mr. Lemmen has a degree in Civil Engineering, specialised in electronics, from the Katholieke Universiteit Leuven. He also holds a degree in Middle Management from the Vlerick School (1992), and a degree from the "General Management Program" from CEDEP in Fontainebleau (2000).

Dr. Vahid Madani – **IEEE Fellow**, is a Principal Protection Engineer at Pacific Gas and Electric Co.



(PG&E) with focus 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 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, and the 2008 Edition of International Journal of Reliability and Safety (IJRS) for InderScience Publishing, and the 2012 CRC Press Power System Stability and Control, Third Edition.

Juan Macias is general manager of Grid Automation for GE's Digital Energy business. Digital Energy is an industry leading provider of advanced products and services that modernize the grid from the power plant to the power consumer. In his role, Juan leads protection & control, substation automation, industrial communications, smart metering and monitoring & diagnostics.



Juan previously served as general manager of Digital Energy's Protection & Control business. He joined GE in 2005 as product general manager for GE Consumer & Industrial's electrical distribution construction products group.

Prior to joining GE, Juan worked for ABB Inc. for 15 years where he held positions in sales, marketing, product and general management in both the U.S. and Mexico.

Juan holds a BS Degree in industrial engineering from New Mexico State University and an MBA from Rollins College in Florida.

Dr. Meliopoulos (Sakis), **IEEE Fellow**, and the recipient of the 2005 IEEE Richard Harold Kaufmann Field award. His first professional association was with Western Electric (1971) in Atlanta, Georgia. In 1976, Sakis joined the Faculty of Electrical Engineering, Georgia Institute of Technology, where he is presently a full professor and active in teaching and research. His areas of expertise are modeling, analysis, control, and advanced instrumentation for monitoring and protection of power systems. He has directed numerous research projects which have resulted in advanced methods for load forecasting, security analysis, reliability, probabilistic production costing, optimal power flow, and operations scheduling.



Dr. Meliopoulos has pioneered several new analysis and design techniques for safety, protection and electromagnetic compatibility of electric power systems. Sakis is the leader in the development of the Harmonic Measurement System, which is based on GPS-synchronized measurements, and the principal inventor of the Smart Ground Multimeter, the Fault Distance Indicator, and the Open Conductor Detector. Presently, he is involved with projects dealing with the use of GPS synchronized measurement for system monitoring and protection and testing of relays and protection schemes.

Professor Meliopoulos is the author of three books, holds three patents, and has published over 200 technical papers. Sakis is a member of the Hellenic Society of Professional Engineering, the Sigma Xi, and Chairman of the Georgia Tech Protective Relaying Conference.

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.

Barbara H. Motteler is the Principal Software Engineer at ALSTOM - She has over 25 years of experience in the Supervisory Control and Data Acquisition Software. Amongst her work are Development of Supervisory Control and Data Acquisition (SCADA) Front-End software as a member of the team responsible for implementing a new Front-End design for Consolidated Edison. Barbara has also served as the technical Lead of the team responsible for designing a new Front-End for WEPCO.



Implemented Remote Terminal Unit (RTU) protocol support for several projects. Detailed knowledge of RTU protocols including Landis & Gyr, Harris and Conitel. Responsible for requirements analysis, scheduling, customer interface, proposal support and supervision of SCADA engineers. Participated in all phases of projects including proposal, implementation, testing and warranty support.

Technical Lead for delivery and support of openPDC Phasor Data Concentrator. Responsible for analysis of customer requirements, documentation, customization, training, delivery and support.

Barbara has a B.S., Mathematics, Pacific Lutheran University

Damir Novosel, IEEE Fellow, is the president of Quanta Technology, a subsidiary of Quanta Services, an S&P 500 company. Previously, he was vice president of ABB Automation Products and president of KEMA T&D US.



Dr. Novosel has served as chair of the PES Technical Council and vice president of technical activities from 2010 to 2012. 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 has published over 100 articles in Transactions, Journals and Proceedings, receiving a PES 2011 Prize Paper Award. He has led or participated in numerous IEEE standards, publications and 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.

Dr. Manu Parashar is a Principal 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.

Vic Romero 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 35 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. He is a 1977 graduate in Electrical Engineering from California Polytechnic State University in San Luis Obispo.



James W. Sample is the Chief Information Security Officer of the Pacific Gas and Electric Company (PG&E). At PG&E James is accountable for the executive leadership, governance, oversight, and support of the company's enterprise technology risk management program. As the CISO, James is instrumental in enabling PG&E to achieve its mission by ensuring controls are in place and effective to protect the public and employees' safety and privacy as well as reliability, and resiliency of the company's operating assets.



James joined PG&E in May 2011 as Director of the NERC Critical Infrastructure Protection. In this position James was responsible for the deployment and administration of the company's critical infrastructure protection program, designing enterprise processes and systems for generation, transmission, and nuclear process control networks.

Prior to joining PG&E, James was the Director of Enterprise Information Security and Policy for the Tennessee Valley Authority (TVA). At TVA, James was directly responsible for the management of cybersecurity, privacy, and technology risk management and compliance across all lines of business. James' experience also includes over eight years of leadership roles at the California ISO, three years of consulting experience, and six years in the U. S. Navy. A recognized enterprise security leader possessing both industrial control system and IT risk management expertise, James has a successful track record in complex, multi-stakeholder environments. James' also possesses in-depth expertise in information and operational technology risk management processes and federal regulations. James holds a bachelor's degree in business management from Western Governors University and multiple security and risk management certifications (i.e., CGEIT, CISSP, CRISC, and CISM).

Peter Schell - is the General Manager and CEO at Ampacimon, an overhead line monitoring manufacturing Company in Liege, Belgium.



His employment experience includes large-scale IT projects at amongst other Deutsche Bahn Cargo and the French distributor Auchan. After that he specialized in Utilities and worked for more than 10 years for different Belgian Utilities to support adapt to the liberalized market and prepare for the roll-out of smart meters. He studied at the University of Stuttgart, Germany and graduated in 1995 as Dipl. Ing. Luft- und Raumfahrttechnik.

Jonathan Sykes is Manager of System Protection at Pacific Gas and Electric Company in Oakland



California. Jonathan graduated from the University of Arizona in 1982, is a Professionally Licensed Electrical Engineer, and has 30 years of engineering experience in System Protection. He is active 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 500kV 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.

Jerry Timiraos - IEEE Senior Member, is the Substation Test Superintendent at PG&E – He has 27+



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 as a Test Engineer leading his career to the Substation Supervisor.

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.

S. S. (Mani) Venkata – IEEE Fellow is a Affiliate Professor of Electrical Engineering at the University of



Washington (UW), Seattle, Washington since January 2008. He is also President, Venkata Consulting Solutions Inc. and associated with KEMA Inc. as a subconsultant. Prior to joining the UW, Dr. Venkata was Dean and Distinguished Professor of Wallace H. Coulter School of Engineering at Clarkson University, Potsdam, New York. He received his B.S.E.E and M.S.E.E. degrees from India, and his Ph.D. degree from the University of South Carolina, Columbia in 1971. He is a registered professional engineer in the states of Washington and West Virginia.

Prof. Venkata has conducted research, design and development work for the more than 20 utilities and power related industries for the past 39 years. Venkata has published and/or presented over 300 publications in refereed journals and conference proceedings, and a co-author of the book Introduction to Electric Energy Systems Prentice-Hall Publications, 1987.

Dr. Venkata is a Fellow of the IEEE. He was a member of the PES Executive Committee and Governing Board, Vice-President of Publications, member of the Finance Committee, the Long Range Planning Committee, and Technical Activities Advisory Board from 2004-2007. In 1996 he received the Outstanding Power Engineering Educator Award from the IEEE Power Engineering Society. He also received the Third Millennium Award from the IEEE in 2000.

Yujie Yin works as a Protection and Control Staff Engineer in GE Digital Energy's Technical Services team.



He has 19 years of electric utility experience from initial studies to detailed substation design, construction and commissioning. In the last five years, he was especially focused on multi-vendor IEC61850 system integration activities, Remedial Action Schemes (RAS) and Wide Area Measurement Protection and Control (WAMPC). Before joining GE, he was a Protection and Control Engineer at Kinectrics and was a key contributor in establishing the first IEC 61850 Interoperability testing facility. He is

a member of IEEE, Cigre B5 WG and a licensed Professional Engineer in the Province of Ontario, Canada.

Marcus Young is a researcher in the Power & Energy Systems Group at the Oak Ridge National Laboratory with research focused towards Wide-Area Measurements and cyber-physical systems.



Marcus joined ORNL in 2010 from the Electric Power Research Institute (EPRI), where he performed testing on power system equipment and assembled EPRI's substation automation laboratory.

Marcus holds an MSEE from the University of Tennessee (2005) and as a graduate student worked as a research assistant in ORNL's applied superconductivity program before joining EPRI. In addition to his current ORNL activities, Marcus is pursuing a PhD at the University of Tennessee. He is a registered Professional Engineer in the state of Tennessee.

Dr. Nicolas Younan - Senior IEEE Member - is the Department Head - 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 image processing and pattern recognition algorithms for remote sensing applications, image/data fusion, feature extraction and classification, automatic target recognition/identification, and

image information mining.

Dr. Younan has published over 200 papers in refereed journals and conference proceedings, and book chapters. He has served as the General Chair and Editor for the 4th IASTED International Conference on Signal and Image Processing (General Chair), Co-Editor for the 3rd International Workshop on the Analysis of Multi-Temporal Remote Sensing Images, Guest Editor, Pattern Recognition Letters, and Associate Editor, JSTARS. He is a senior member of IEEE and a member of the IEEE Geoscience and Remote Sensing society, serving on two technical committees: Data Fusion, and Data Archive and Distribution.

Dr. Younan has received several awards, including the Outstanding Engineering Research Award, James Worth Bagley College of Engineering, Mississippi State University, 2003 and the Best Research Paper Award, College of Engineering, Mississippi State University, 2000. He was recognized for maintaining consistent external research funding by the Office of Vice President for Research at Mississippi State University. He has been named a Hearin Eminent Scholar for his outstanding research and scholarly contributions to the James Worth Bagley College of Engineering at Mississippi State University, 2003 – 2008.

He is a senior member of IEEE, member of ASEE, and other honorary societies.



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 – 26.5 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.

Message from Chairman, CEO, President – Peter Darbee, February 26, 2009 - “What does it look like to be the leading utility? Exactly how do you define leading? Does leading mean the best? If so, best at what? How do we measure it? Who is the leader now?.....At a minimum, the vision should be a constant reminder of the mindset with which we all should approach our work. It should serve to help us keep our thinking broad, bold and attuned to what's happening in the world around PG&E.”

The i-PCGRID Workshop Organizing Committee hopes we have fulfilled this vision.