



## Sponsors



Valued Quality. Delivered.



## OEM Steering Group



## Agenda

Wednesday, March 25

- 5:30-7p **Cocktails on the Hill, all are welcome**  
Rayburn House Building B-354, 45 Independence Ave SW, Washington, DC
- 7:30-9:30p **"Dutch Treat" cash-only group dinner, all are welcome**  
Bullfeathers of Capitol Hill, 410 First St SE, Washington, DC

Thursday, March 26 **Electrical Systems Subgroup Meeting**  
Senate Room, JW Marriott, 1331 Pennsylvania Ave NW Washington, DC

### 7:30a Registration and Breakfast

- 8:00a **Welcome and Opening Remarks**  
*Heather Rhoads-Weaver, eFormative Options, SMART Wind Project Manager*  
*Trudy Forsyth, Wind Advisors Team, SMART Wind Technical Lead*

- 8:05a **Electrical Subgroup Opportunities and Gaps**  
*Brent Summerville, Summerville Wind & Sun, SMART Wind Technical Co-lead*

- 8:35a **Self-Introductions by Subgroup Participants**  
*(Introductions will also occur during the March 25th dinner.)*  
What do you hope this project to accomplish? What are your areas of expertise?

### Introduce Subgroup Leaders

*Dr. Ruth Douglas Miller, Kansas State University*  
*Dr. Greg Mowry, University of St. Thomas, School of Engineering*  
*Dr. Ed Muljadi, NREL*  
*Dr. Rob Wills, Intergrid Consulting, LLC*

- 9:00a **Future of the Grid:**  
**Smart Grid and Distributed Wind**  
*Scott Sklar, The Stella Group, Ltd*  
*Robert Preus, NREL*  
*Q&A, Discussion*

### 10:00a Break

- 10:30a **Alternator Panel Discussion**  
10-15 minutes each followed by discussion

*Overview in Latest Research in PM Alternators, Dr. Ed Muljadi, NREL*  
*Rare Earth Magnets, Jim Sims, Molycorp, Inc.*  
*Opportunities in Alternator Design and Manufacturing, Dr. Greg Mowry,*  
*University of St. Thomas*  
*Coil Winding, Dr. Keith Klontz Ph.D., Advanced Motor Tech, LLC*

**Objective:** For participants of the SMART Wind Consortium Electrical Systems Subgroup to meet each other, identify gaps and opportunities, learn about state-of-the art technology and manufacturing methods and capture information for the final Roadmap.

- 12:00p **Lunch**
- 1:00p **Shock and Fire: Electrical Safety and Standards**  
*Electrical testing and certification, Mike Hudon, Intertek (virtual)*  
*UL6142, Chris Storbeck, UL*  
*Energy Storage and NEC, Dr. Rob Wills, Intergrid*
- 2:00p **Power Electronics Panel Discussion**  
10-15 minutes on latest greatest followed by discussion  
*A 20 kW power electronics setup using variable speed drive front end and Power One inverter, Dr. Rob Wills, Intergrid*  
*A Novel Single-phase Inverter with Distribution Static Compensator Capability for Wind Applications, Dr. Ruth Douglas-Miller, Kansas State University*  
*Cost Effective Power Electronics for Low Volume Production, Joshua Kaufman, Pika (virtual)*  
*Power America and Distributed Wind, Dr. John Muth, NC State University, Department of Electrical & Computer Engineering*
- 3:30p **Break**
- 4:00p **Report from Rapporteur**  
*Ruth Baranowski, Wind Advisors Team*  
Refine the list of gaps and opportunities  
Brainstorm actions regarding listed gaps  
List next (virtual) meetings
- 5:00p **Close of Meeting**
- 5:30-7:30p **Invitation-Only for OEMs, Subgroup Leaders & Core Team**  
Discussion on next steps, thoughts, feedback

## Participants



**Bouaziz Ait Driss, Chief Innovation Officer, Eocycle Technologies Inc.** holds a Masters in Renewable Energies and has more than 25 years of experience in the development of energy systems in Africa, Europe and North America. His experience in the energy sector stems from designing, implementing and operating of a multitude of wind and solar power projects and mandates. Before he joined Eocycle, he worked and led teams of engineers at GL Garrad Hassan, research and development organizations including academia. The variety of projects he was involved in have allowed him to develop expertise in the design of small- and large-scale electricity generators, integration of power projects onto both isolated and utility grids, power electronics, energy conversion systems, control systems, wind and solar energy studies and environmental assessments. In all, Mr. Ait Driss has managed projects totaling more than 20,000 MW of planned capacity. As Chief Innovation Officer with Eocycle, with a team of engineers he leads the development and implementation of cutting-edge energy conversion solutions for the small wind industry.



**Vladimir Antikarov, Verea Group, LLC** is an experienced professional with leadership roles in sophisticated financial transactions, corporate finance, strategy development and enterprise risk management. His experience includes work with Fortune 500 companies as well as international front runners such as AT&T, Merck, Lockheed Martin, Alcatel-Lucent, Thomson Reuters, Philips, OSG, Roche, Valle, Votorantim, Telefonica and Axel Johnson. In addition, he is co-author with Tom Copeland of best-selling book, *Real Options, A Practitioner's Guide*, which is used by MIT, Harvard and The Wharton School and by corporate finance practitioners. He has been cited as a thought partner in McKinsey & Company's book *Valuation: Measuring and Managing the Value of Companies*. He is interested in collaborating with professionals in the same areas of work and in exploring new opportunities.



**Ruth Baranowski, Communications Director, Wind Advisors Team** provides project communications support, serves as SMART Wind Consortium

secretary documenting meeting discussions and outcomes, and as the Roadmap editor. Her 11 years of experience in the wind industry, including as the communications coordinator for the U.S. DOE's Wind Powering America initiative, provides a solid foundation for understanding key concepts and terminology.



**Bret Barker, New West Technologies**, is a distributed wind analyst contracted to the Wind Program at the U.S. Department of Energy. As subject matter expert for distributed wind energy systems, Bret's primary role is as a strategic planner, identifying opportunities to reduce the cost of wind energy from

distributed systems and linking them to Program R&D priorities and investments. In addition, Bret provides management support for a portfolio of public investments in wind technology development, market acceleration, and outreach initiatives. Prior to his work supporting the DOE, Bret spent several years in project management, product design and development. Bret holds a BFA degree in Industrial Design from the Rhode Island School of Design.



**Mike Bergery, President, Bergey Windpower** is a mechanical engineer and an internationally recognized expert in the field of small wind turbines, distributed generation, and rural electrification. A co-founder of Bergey Windpower and president since 1987, he holds one patent in the wind energy field. He has

twice served as president of the American Wind Energy Association (AWEA) and served on the AWEA Board of Directors from 1981 to 2007. He is a past chairman of the U.S. Export Council for Renewable Energy, member of the U.S. Department of Commerce "Environmental Technology Trade Advisory Committee," and a past president of the Oklahoma Renewable Energy Council. Mr. Bergery is the acting-president of the Distributed Wind Energy Association.



**Charlton Clark, Grid Integration Team Lead, U.S. Department of Energy Wind and Water Technologies Office**, manages research and development activities related to wind interconnection/integration. Prior to joining DOE, Mr. Clark was employed by the Federal Energy Regulatory Commission (FERC) where he worked as

a staff engineering witness, testifying in and negotiating settlements, for administrative law cases at FERC. He holds M.S. and B.S. degrees in electrical engineering and is a graduate of the Electric Utility Management Program from New Mexico State University.



**Trudy Forsyth, Managing Director, Wind Advisors Team** has more than 20 years of experience in wind technology. She led the DOE/NREL small and distributed wind program for 18 years where she helped design new US small wind turbines, test prototypes and commercial turbines to standards, develop

international and national standards, and develop distributed wind marketing and education materials. She worked closely with DOE program managers to develop multi-year strategies and implement program objectives. She is currently the president of the SWCC Board, past present for Women of Wind Energy and a DWEA board

member. She holds a BS and MS in mechanical engineering from the University of Colorado-Denver.



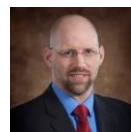
**Aimee Gardere, Event & Membership Coordinator, DWEA** is a recent graduate of Fort Lewis College in Durango, CO, where she earned a B.A. in English-Communications. She has experience in event planning, marketing, writing, social media, and other fields of communications. In her role with DWEA, she focuses on current members as well as reaching out to potential new supporters and partners and helps plan and organize DWEA events.



**Jenny Heinzen, Midwest Renewable Energy Association**, is a licensed Master Electrician in Wisconsin, and teaches many of the MREA's basic PV and small wind online courses. She has a B.S. in Career and Technical Education, and volunteers for many renewable energy boards and committees, including NABCEP and RENEW Wisconsin. She's been active in wind energy siting issues at the local and state level for over a decade, and served on the Wisconsin Wind Siting Council to help the PSC develop statewide uniform standards. Before coming to the MREA, Jenny developed and was the lead instructor for Lakeshore Technical College's Wind Energy Technology Associate Degree Program. She partners with 6 others to organize the annual Small Wind Conference in Stevens Point, WI every June.



**Bill Hetzel, Pika Energy Director of Operations**, has a passion for outdoor adventure and the environment working summers as a camp counselor in Maine. Bill started his career as a management consultant for Oliver Wyman, and then he moved to Merck & Co. where he engineered global chemical plant capacity for their active pharmaceutical ingredients. For the next 13 years, Bill worked at Tom's of Maine as leader of Procurement, Supply Chain, and then as Plant Manager, responsible for all the operations of their Sanford, Maine facility. Bill holds a BS in chemistry from Yale, and an MS in chemical engineering and an MS in management, both from MIT.



**Troy Hewitt, Global Business Leader for Wind Energy, Intertek**, has over ten years' experience in the wind industry as well as extensive experience with renewable energy, power generation and other industrial products. In this role, he sets the global agenda for Intertek's sales, marketing, operations and engineering teams as it relates to the wind market. He is also Director of Operations for energy and hazardous location products and sits on the board of directors of the Center for Evaluation of Clean Energy Technology (CECET) and the Industry Advisory Board of the Center for Future Energy Systems (CFES). Troy holds an M.S. and B.S. degree in physics from Clarkson University in Potsdam, NY.



**Michael Hudon, Engineering Team Lead for Wind Energy, Intertek**, in Cortland, New York, has over five years of experience in both wind turbine and inverter compliance. He is responsible for the wind turbine certification engineering team in the U.S. and Spain, and coordinating other Intertek teams worldwide. Michael was selected for Intertek's "fast track" management program in 2012 to train and develop the wind certification team and assist with business development in Europe, specifically



Wiesbaden, Germany. Michael holds a B.S. degree in environmental science from the State University of NY at Albany.



**Jennifer Jenkins, DWEA Executive Director** has over ten years experience in the wind industry including her tenure at Southwest Windpower in their Government Affairs department. In this role, she was an integral part of the team that successfully sought passage of the Federal 30% tax credit for small wind systems. In her current role as Executive

Director of DWEA, Ms. Jenkins works directly with members, stakeholders, and policy makers to find opportunities to grow the distributed wind market. Ms. Jenkins earned her Bachelor of Science in Environmental Science with an emphasis on policy and public administration from Northern Arizona University and is the 2012 recipient of the Women of Wind Energy's Rising Star award.



**Dr. Haran Karmaker, Principle R&D Engineer, TECO-Westinghouse Motor Company** received Ph.D. in Electrical Engineering from the University of Toronto, Canada in 1974. He served as Electromagnetics Team Leader of the R&D team at General Electric Canada for 30 years. He joined TECO-Westinghouse R&D in 2004, where he is now a Principal Engineer. He has published over 60 technical papers in peer reviewed international journals and conference proceedings. In 2008, he received the Best Paper Award by the IEEE Power & Energy Society for his paper on Investigations on Skewed Stator Synchronous Machines published in the Transactions on Energy Conversion. He has contributed technically to the development of many international standards. He was Chair of the working Group on the 2009 edition of the IEEE standard 115 "Synchronous Machines Test Procedures". He has served as Chair of the IEEE working group developing a new standard on "Guide for Testing Permanent Magnet Machines" published in 2014. He is a co-author of the Design Handbook on Electric Motors published by Marcel & Dekker in 2004. He received the Outstanding Engineer Award of IEEE Canada in 2004. He has six U.S. and international patents. He is a Life Fellow of IEEE.



**Joshua Kaufman, Pika Energy's Director of R&D and Co-founder** grew up on the Great Plains of Kansas where he learned first-hand of the power of the wind and the sun. Joshua served as the sole electrical engineer at Southwest Windpower, where he led development of control electronics for the Skystream, Whisper and Air wind turbines. He also served as a consultant to numerous startups developing wind and solar energy products, including Windspire, California Wind Systems, PetraSolar, SunPower and SolFocus. Many of these companies struggled to meet their power and data transmission needs, and this experience led Joshua to develop Pika's REbus™ Microgrid technology. Joshua holds BS and MEng degrees in Electrical Engineering and Computer Science from MIT, with a focus on power electronics and feedback control.



**Dr. Keith W. Klontz, President & CEO of Advanced MotorTech LLC**, an engineering services company with emphasis on electric machine design, holds BS & MS degrees in

Electrical Engineering from the University of Illinois, Champaign-Urbana, and a Ph.D. in Electrical Engineering from the University of Wisconsin-Madison. Dr. Klontz is a world-recognized expert in electric machine design and has over 40 years hands-on experience with electric machine applications and design engineering. He has been involved in the research, development, testing, repair, and training of high performance machines from 10 Watts to 50 MW. Recent work includes design of permanent magnet alternators, IPM traction motors, brushless DC motors, brush d.c. motors, high efficiency induction motors, and very high power density machine.



**Ken Kotalik, Director of North American Sales, Primus Wind Power**, works out of the Primus Flagstaff, AZ office. Ken has a bachelor's degree in Science from Northern AZ University. He has been working in and around the renewable energy field for 15 years in various roles including; technical sales, sales engineering, installation and training. Prior to his work with Primus Wind Power, a division of Primus AeroSpace Manufacturing, he was a Sales Manager and Training facilitator for Southwest Windpower. He built his own passive and active solar straw bale house in Flagstaff, AZ.



**Dr. David Laino, Co-Founder, Principal Engineer, Endurance Windpower** was a co-founder of Windward Engineering 1999 and a lead designer on the original Endurance S-Series turbine. Previously, he worked at NREL, where he developed wind turbine computer modeling capabilities to analyze innovative designs, and evaluate proposed safety standards. He also analyzed and compared test and simulation data in validation studies. He is an active member of DWEA and Co-Administrator of the US Technical Advisory Group to IEC Technical Committee for Wind Turbine Standards. He has a Ph.D. in Mechanical Engineering and a MSME from the University of Utah, and a B.S. in Aeronautical Engineering from Rensselaer Polytechnic Institute, Troy, NY.



**Dr. Jonathan Miles, Director of Research, Development, & Commercialization Coordinator at James Madison University** is a Professor of Integrated Science and Technology and Director of the Center for Wind Energy at James Madison University. His background is in physics and mechanical engineering and he teaches a range of courses at all levels involving the applied sciences along with engineering and energy. Dr. Miles has been involved with wind energy since 1998.



**Dr. Ruth Douglas Miller, Associate professor of electrical and computer engineering at Kansas State University** has directed K-State's Wind Application Center, which runs the state's Wind for Schools program, since 2007. In the program, K-12 schools receive small wind turbines to educate students about wind energy and interest them in careers in the field. By the end of 2014, the program is expected to have 23 turbines in place. The Wind Application Center also runs the High Plains Small Wind Test Center in partnership with Colby Community College; under a grant from DOE/NREL the center is testing two small turbines for certification under the AWEA Small Wind Standard. Ruth is a member of IEEE, Tau Beta Pi and Eta Kappa Nu, and has more than 25 academic publications. Douglas

Miller earned her doctorate and master's at the University of Rochester and her bachelor's degree at Lafayette College.



**Stephen Meier, Orchid International**, has been involved in the manufacturing industry for the past 35 years and has worked for Orchid the past 9 years. Orchid has grown from a supplier of magnetic ballast laminations to a supplier of power transformer, AC/DC motor laminations and generator laminations in a wide range of size and type. Orchid's ability to test, slit, stamp, anneal, weld, interlock, rivet and bond electrical steel makes it a leading provider of laminations and lamination sub-assemblies. Orchid also designs, builds and maintains complex progressive carbide stamping tools.



**Dr. Greg Mowry, University of St. Thomas, School of Engineering** was raised in Iowa and in the 1970s received a BS and MS in Metallurgical Engineering from Iowa State University. While working Dr. Mowry continued his education through a non-thesis MSEE degree program at Stanford University in analog electronics and micro-magnetics. Later, while leading the advanced design teams at Seagate Technology, he received his Ph.D. in Electrical Engineering with a minor in Physics from the University of Minnesota. Dr. Mowry spent 25 years in corporate America as an inventor, team builder, R&D scientist, and engineer. His work focused on Nano-technology (both design and processing), materials engineering, micromagnetics, laser optics, and biomedical engineering. Dr. Mowry is also an entrepreneur with experience in several technical startups. He is named on 40 patents along with multiple publications in four different technical fields. In 2003 Dr. Mowry joined the School of Engineering at the University of St. Thomas. He is the Director of the MSEE program, which has a power emphasis, and the Director of REAL – the Renewable Energy and Alternatives Laboratory. Dr. Mowry's research interests vary widely. His current research is focused on reliable, robust, and economic microgrids, alternative energy systems, power electronics, graphene, and biofuels.



**Dr. Eduard Muljadi, NREL**, received his Ph. D. in Electrical Engineering from the University of Wisconsin, Madison. From 1988 to 1992, he taught at California State University, Fresno, CA. In June 1992, he joined NREL in Golden, Colorado. His current research interests are in the fields of electric machines, power electronics, and power systems in general with emphasis on renewable energy applications. He is a member of Eta Kappa Nu, Sigma Xi and a Fellow of the IEEE. He is involved in the activities of the IEEE Industry Application Society (IAS), Power Electronics Society (PELS), and Power and Energy Society (PES). He is currently a member of various committees of the IAS, PES, and an Editor of the IEEE Transactions on Energy Conversion. He holds two patents in power conversion for renewable energy.



**Dr. John Muth, School of Electrical and Computer Engineering, NC State University** has research interests in wide band gap semiconductors, the optical characterization of novel materials, and photonic devices. With wide band gap semiconductors he is especially interested in how the

high excitonic binding energy of GaN and ZnO alloys can be exploited for efficient light emitters and ultraviolet photodetectors. Recent work has shown that MgZnO is a very efficient light emitter and may have high potential as an optoelectronic material. Presently he is also investigating the optical properties of nanoparticles produced by pulsed laser ablation. By changing the surrounding matrix of the particles and the size of the particles he is able to investigate the plasmon resonance in metal particles and quantum confinement effects in semiconductor nanoparticles. Dr. Muth is also an active user of the NCSU microfabrication facility where he has fabricated LEDs and ultraviolet diode arrays, and he is investigating high index waveguides for optical communications.



**Robert W. Preus, PE, NREL** is Technical Lead for Distributed Wind at NREL. He was the founder of Advanced Renewable Technology which provided training, engineering, and certification support for small wind manufacturers. He has 27 years of experience in wind energy. He led the successful development of 2.5 kW to 300kW wind generators. He has extensive experience in design of wind energy systems. He has trained many dealers in the installation of distributed wind systems and served on the committees that developed NABCEP installer certification task list, applicant experience requirements and the exam writing. He was the co chair of the group that wrote a section for small wind in the NEC. In 2010 he received the Small Wind Advocate award from Wind Powering America.



**Heather Rhoads-Weaver, Founder and Principal Consultant, eFormative Options LLC** specializes in distributed wind policy and market analysis, funding development, and stakeholder communications. Heather is the elected Secretary for DWEA's Board of Directors and serves as co-chair of DWEA's State Policy Committee. She also served as AWEA's first Small Wind Advocate, was founder of Northwest Sustainable Energy for Economic Development, and worked for Global Energy Concepts, the National Wind Coordinating Committee, and Iowa Citizen Action Network. She holds an M.S. from the University of Northern Iowa and a B.A. from Wesleyan University.



**Jim Sims, Vice President of Corporate Communications for MolyCorp, Inc.**, is one of the world's leading manufacturers of engineered rare earth materials. Jim serves as the Company's global spokesperson and manages all corporate communications, news media relations, government relations, and marketing / digital communications. Prior to joining MolyCorp in 2010, Jim was President and Chief Executive Officer for 11 years of Policy Communications, Inc., a public affairs and lobbying consulting firm that served clients in the manufacturing, energy, utility, mining, transportation, chemical, electric transmission, and related sectors. During this time, he also served in the following roles: Chief Executive Officer of the Western Business Roundtable, a 40+-year-old trade association of C-Level executives in the energy, mining, energy infrastructure, chemical, manufacturing, and other industries. In 2010, Jim served in the White House as Director of Communications for the President's National Energy Policy Development Group and worked to develop the recommendations of the President's National Energy Policy. Prior to this, he served for six years as the Executive Director of the U.S. Geothermal Energy Association, and was the Executive Director of



# SMART WIND CONSORTIUM

Electrical Subgroup JW Marriott  
Washington, DC March 25-26, 2015

the Clean Power Cells Coalition, a group committed to promoting greater use of fuel cell technologies. Jim served as a senior staffer in the U.S. Senate from 1981-1992, completing his service as Chief of Staff to U.S. Senator Bob Kasten (WI). He is a former reporter and copy editor for the Des Moines Register. Jim received his B.A. from Georgetown University, magna cum laude, in 1984.

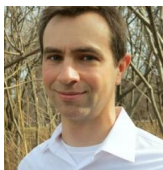


**Scott Sklar, The Stella Group, Ltd** founded the clean energy technology optimization and strategic policy firm, in 1995 and came on full time to lead in 1999, after 15 years running national solar and biomass industry associations. The firm facilitates clean distributed energy projects for commercial, industrial, and military applications. The firm specializes in blending technologies and financing projects, as well as assisting companies' market penetration with a focus on standardized, modular, web-enabled, and interoperable systems. Sklar was Political Director of the Solar Lobby (2 yrs), after 3 years at NCAT, and served (9 years) as an energy/military aide to Senator Jacob K Javits (NY). He lives in a zero energy solar home and has a zero-energy office building powered by solar and wind and also has wind & solar PV on his demo van. Sklar serves as Steering Committee Chair of the Sustainable Energy Coalition, and sits on the BCSE and TSF national Boards. Sklar is an Adjunct Professor at GWU, and an Affiliated Professor at CATIE (Costa Rica). In 2014, Sklar received The Charles Greely Abbot Award by ASES and the Green Patriot Award by GMU, and serves as Chair of the US Dept of Commerce Renewable Energy Advisory Committee through 2016.



**Joseph Spossey, Intertek** currently serves as Technical Expert and Wind Power category lead for Intertek's wind turbine testing and certification team. Joe earned his BSME from Rochester Institute of Technology, and since joining Intertek in 2009, his primary focus is the development of Intertek's

Small Wind Regional Test Center. Prior to Intertek, Joe worked in construction materials testing performing field and plant inspections for concrete, reinforcing steel, and soils and aggregates. He participates on numerous committees supporting advancement of the IEC 61400 series of wind turbine standards, and is a voting member of the AWEA Wind Standards Committee.



**Chris Storbeck, Staff Engineer, UL** has worked at UL as a Staff Engineer in the Renewable Energy group since 2004. In that role he has handled certification projects for various wind turbine, photovoltaic, fuel cell, and energy storage systems and components with an emphasis on

power converters and wind turbines. Chris has participated in UL's wind turbine standards development for large and small wind standards, as well as supporting testing at the UL and West Texas A&M University Advanced Wind Turbine Test Facility in Canyon, Texas. Chris received a Bachelor's Degree in Electrical Engineering from the Milwaukee School of Engineering in 1998 and is a licensed Professional Engineer in the state of Illinois.



**Ryan Storke, Wind Turbine Technician, CEC Energy** holds an Associate's Degree in Diesel Technology and a Bachelor's Degree in Renewable Energy Technology from Morrisville State College. Ryan is the Division Manager for

CEC Energy, overseeing all project and company developments. Ryan enjoys running, biking, swimming, rock climbing and other activities that get him into the great outdoors.



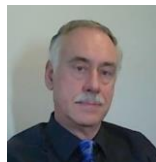
**Brent Summerville, PE, President, Summerville Wind & Sun** is a licensed professional engineer in the State of North Carolina (license # 034486) with a BS in Mechanical Engineering from North Carolina State University and a Masters in Appropriate Technology from Appalachian State University (ASU). He started his career in renewable energy at ASU by designing, installing, troubleshooting and providing training on solar water, PV, microhydro and distributed wind energy projects. He gained extensive experience testing small wind turbines while serving as the manager of the ASU Small Wind Research & Demonstration Site on Beech Mountain.



**Diego Tibaldi, Global Renewable Energy Executive, Northern Power Systems** is a focused and driven leader with 20+ years of diverse international experience in corporate divisions as well as start-ups, leading and growing in complex markets worldwide, and running field operations "hands on" with a diverse global footprint.



**Thomas A. Williams, Jr., CEO, Ventera Wind, Inc.** served as the managing director for Northcoast Wind & Power, LLC for 9 years developing small to mid-sized utility grade wind generation facilities for publicly owned power providers and commercial and institutional distributed wind installations. Mr. Williams has also acted as a consultant in renewable energy finance.



**Dr. Rob Wills, Intergrid** has been involved in the US solar industry for 32 years and wind for 15 years. He has designed inverters ranging in power from 250W to 250 kW, and was co-designer of the inverter for the Skystream wind turbine. Rob currently represents the wind community on the US National Electrical Code (Article 694), and also sits on a number of related UL and IEEE standards committees. He is chair of the NEC task group that is writing a new article on Microgrids. Dr. Wills is a consulting engineer whose current clients include wind turbine, energy storage, and utility companies. He lives in southern NH.



**Jay Yeager, Xzeres Wind Corp** is a wind industry veteran with extensive background and experience in small wind turbine technologies, manufacturing, field testing, wind turbine certification, product development and design, project management and distributed wind systems development around the world. He has focused greatly on village electrification in underserved and remote locations with full cycle involvement from resource assessment to siting to modeling and system design, funding, deployment, installation and commissioning.

Mark your calendar for upcoming  
**Monthly SMART Wind webinars**  
starting Wednesday, April 29  
1 pm ET, last Wednesday of each month