



OUR WIND OUR POWER OUR FUTURE

## Final Roadmap Review Meeting Agenda – JW Marriott Congressional Room

Link to view screen and join meeting virtually: <https://global.gotomeeting.com/join/519028589>

Phone dial-in if needed: (646) 749-3122, Access Code: 519-028-589

### Monday, February 22

#### 1:00p Welcome & Introductions, “What have you gained from the Roadmapping process?”

*Jennifer Jenkins, DWEA*

#### 1:15p Overview of TOC, Methods & Ground Rules for Consensus

*Heather Rhoads-Weaver & Matt Gagne, eFormative Options*

- One response/position per company, balance OEMs and other stakeholders
- Mark detailed edits on hard copy or redline Word file by March 4

#### 1:40 Presentation & Discussion of Action Plan to Address Industry Barriers (Section 5)

*Trudy Forsyth, Wind Advisors Team & Brent Summerville, Summerville Wind & Sun*

- Anything critical missing from top level executive summary bullets, table, or “baskets”?

#### 2:30p Break

#### 2:45p Continue Discussion of Action Plan to Address Industry Barriers

*Trudy Forsyth & Brent Summerville*

- Major areas of agreement, any major objections?

#### 3:30p Future of Consortium: “Where would you like to see SMART Wind go?”

*Heather Rhoads-Weaver & Trudy Forsyth*

- What’s next for Consortium? Near-term opportunities?

#### 4:00p Opportunity for Feedback on Front Matter, Exec Summary, and Cover Graphics

*Jennifer Jenkins & Heather Rhoads-Weaver*

#### 4:30p Opportunity for Feedback on Section 4: Partnering Opportunities

*Britton Rife, eFormative Options*

- Anyone missing?

#### 4:50p Opportunity for Feedback on Sections 1-3, References and Consortium Directory

#### 5:10p Wrap up on Next Steps & Dissemination Efforts, Future Funding Opportunities

#### 5:30p Adjourn

#### 6:30p Dutch treat dinner at The Hamilton, 600 14th St NW, Washington, DC 2005

RSVP to Aimee Gardere, [agardere@distributedwind.org](mailto:agardere@distributedwind.org)

#### Meeting Objective:

*For SMART Wind Consortium leaders to provide final substantive feedback on scope and findings of the 2016 SMART Wind Roadmap and confirm accuracy of priority actions ranked online by 80 participants.*

*Thank you to SMART Wind funder!*

### Participants



**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.



**E. Ian Baring-Gould – Wind & Water Technology Deployment Manager, NWTC** graduated with a MSME from the University of Massachusetts Renewable Energy Research Laboratory in 1995 and started working at the National Renewable Energy Laboratory (NREL) of the United States. Ian’s work

at NREL has focused in three primary areas; applications engineering for Renewable Energy (RE) technologies, assistance in RE uses and educational outreach for renewable energy technologies, primarily wind. Ian is currently the Wind Technology Deployment Manager at NREL, focusing on assisting organization deploy wind technologies and addressing barriers to the implementation of wind energy through programs including DOE’s Wind Powering America and WINDEXchange.



**Bret Barker –Barker Advisory** 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 Bergey – 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. Bergey is the acting-president of the Distributed Wind Energy Association.



**Roger Dixon- Owner, Skylands Renewable Energy** has been involved with the evolution of wind electric for 38 years. He is a NJ CEP (Clean Energy Program) Approved Wind Turbine Installer for both residential and commercial applications and is a

NYSERDA (New York State Energy Research and Development Authority) Approved Wind Turbine Installer. His expertise and qualifications are internationally recognized and he provides wind turbine related consulting services for a variety of professional groups, including The Society of Industry Leaders, Gerson Lehrman Group Natural Resources Council and Vista International and served as an advisor to the University of California Riverside Wind Energy Project. He is one of only two endorsed renewable energy vendors for the New Jersey Farm Bureau.



**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.



**Matt Gagne- eFormative Options LLC** has worked in the wind energy industry since 2006 with both utility and distributed wind applications. He has a diverse skill set, including data analysis, GIS analysis, and technical writing. He has worked on market analysis

for multiple distributed wind market report for the Department of Energy and AWEA. He has been involved in the analysis of more than 1000 MW of installed wind power projects. He has also helped develop the Distributed Wind Policy Comparison Tool in conjunction with the Pacific Northwest National Laboratory. He holds a BA in journalism from Western Washington University with an emphasis in statistics and geography.



**Aimee Gardere – Communications Manager, DWEA** attended Fort Lewis College in Durango, Colorado where she earned a Bachelor of Arts in English-Communications. Aimee has experience in many fields of communication from event

planning, marketing, writing, social media, and much more. In her role, she focuses on current members as well as reaching out to potential new supporters and partners. She also helps plan and organize DWEA events at a regional and national level. When Aimee isn’t in the office or on the road for DWEA, she is most likely enjoying the adventure and beauty her town Durango, Colorado has to offer.



**Bill Hetzel-Director of Operations, Pika Energy** developed his 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.



**Jennifer Jenkins – Executive Director, DWEA** has over ten year's 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.



**Padma Kasthurirangan -Engineer and co-owner, Niagara Wind & Solar, Inc.,** based in Niagara Falls, NY. In addition to a Master's degree in Electrical Engineering, Padma is also trained in the structural aspects of small wind tower and foundation engineering. She specializes in project siting, permitting, grant writing, complete project engineering, grid interconnection design and project management for distributed wind and solar projects ranging from 5 kW to 2 MW. Her company has the highest rate of success at USDA REAP grants for distributed wind in the state. She is also a NABCEP certified Solar PV installation Professional and the only NYSERDA eligible woman installer for distributed wind in NY.



**Richard Legault – President, CEO, Eocycle Technologies** is a Mechanical Engineer, holds a M.Sc. in Project Management and has more than 20 years of experience in wind energy. He has founded commercialized and successfully monetized five (5) companies in the wind space. Prior to joining Eocycle, Mr. Legault held various positions with Germanischer Lloyd AG (now DNV – GL) (Global Head Renewables and Management Committee); Helimax (CEO and Founder), CEO and co-Founder of NEG Micon Canada (now Vestas); Director for Canada at Kenetech Windpower (now General Electric); and is a mentor for business accelerator ECOFUEL. Mr. Legault is highly recognized and regarded globally in

the wind energy sector and has been the recipient of numerous industry awards.



**Dr. Patrick Lemieux- Associate Professor of Mechanical Engineering, California Polytechnic State University** is a Bently Professor of Mechanical Engineering at Cal Poly, involved with wind power research for over 20 years. Over the past 6 years, has developed Cal Poly's Wind Power Research Facility and presented progress made at AWEA conferences nationally as well as in a federal congressional panel on energy issues. The facility's goal is to prepare the next generation of wind power mechanical engineers by studying and developing systems according to a design philosophy relevant to utility-scale wind turbines, but implemented to small machines suitable for university research and teaching. Prime area of research focuses on the aerodynamic design and control of wind turbine blades; interests include the turbine system assembly and structure as a whole. Also concerned with issues regarding global energy sustainability and climate change.



**Dr. Thomas R. Lettieri -Project Manager, AMTech Program, National Institute of Standards and Technology (NIST)** where he manages a broad portfolio of technology consortia. From 2008-2014, he was a Project Manager in the NIST Technology Innovation Program (TIP), where he managed a portfolio of projects focused primarily on photonics and optics technologies, as applied to the areas of civil infrastructure and advanced manufacturing. Before TIP, Dr. Lettieri was with the Advanced Technology Program (ATP) at NIST, managing a portfolio of optics/photonics R&D projects conducted by U.S. companies. From 1978 to 1993, Dr. Lettieri was a laboratory scientist at NIST/NBS, working mainly in the fields of optical metrology, precision engineering, particle measurement, and thermophysics. Dr. Lettieri received his Ph.D. and M.S. in Optics from the University of Rochester, a Masters in General Administration from the University of Maryland (UC), a B.S. in Anthropology from the University of Maryland (UC), and a B.S. in Electrical Engineering from the University of Miami.



**Dr. Pier Marzocca – Clarkson University** has been a faculty member in the Mechanical and Aeronautical Engineering Department at Clarkson since 2003. He received his doctorate in Aerospace Engineering from Politecnico di Torino, Italy, and worked as a Postdoctoral Researcher and Visiting Assistant Professor in Engineering Science and Mechanics at Virginia Tech before joining Clarkson. He has been working in aerospace engineering since 1996 and specializes in multi-physics modeling and characterization of advanced materials and structures, dealing with the interactions among advanced structures and fluids, magnetic, electric, and thermal fields. He leads/co-leads a number of research projects with funding from several government



agencies, including NSF, AFOSR, ARMY, DOE, EPA, NYSERDA, private foundations, such as MDA and Syracuse CoE, and industries, including GE, Pratt & Whitney, and Intertek. He is currently an Associate Fellow of AIAA, the Chair of the SAE Unmanned Aircraft System Technical Committee, Deputy Editor-in-Chief of the International Journal of Aeronautical and Space Sciences, and Associate Editor of the ASCE Journal of Aerospace Engineering and the Journal of Thermal Stresses.



**Dr. Paul Migliore-Anemergonics** has 35 years' experience in virtually all aspects of wind energy, including research and teaching in academia, wind farm development, engineering design, manufacturing, consulting and project management. Since retiring from NREL in 2005, he has consulted for numerous wind turbine manufacturers, primarily in the areas of aerodynamics, aeroacoustics, foundations, and tower design. As a consultant to NREL he assisted with the implementation of computational aeroacoustics projects and wind tunnel aerodynamic and aeroacoustic tests. He was also under contract to report on wind tunnel tests of candidate low-noise blade tips for small wind turbines. Dr. Migliore has his BS, MS, and PhD in aerospace engineering from West Virginia University and an MS in systems management from the University of Southern California.



**Dr. Ruth Douglas Miller-Associate Professor, Kansas State University** has directed K-State's Wind Application Center since 2007, which runs the state's Wind for Schools program. 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.



**Peter Mostow-Wilson Sonsini Goodrich & Rosati** where his practice focuses on the representation of emerging and mature companies in the fields of energy and clean technology. Peter's background in energy, regulatory, natural resources, and

environmental law allows him to assist this client base with the development and finance of energy-generating plants and manufacturing facilities. He represents solar, wind, geothermal, and biomass project sponsors in site acquisition, permitting, power transmission, and offtake agreements; distributed solar power purchase agreement companies in developing their key commercial and financing agreements; and producers of new

technologies from renewable fuels to thin film solar modules in drafting and negotiating key commercial transactions. Peter's prior energy industry experience includes project development work for the sponsors of hydroelectric projects, gas-fired power plants, underground natural gas storage facilities, gas pipelines, and liquefied natural gas terminals.



**Charles Newcomb – Endurance Windpower** serves as EWP's Director of Technical Strategy to align the company's technical solutions with business strategies. He brings more than 15 years of experience in nearly all aspects of the wind industry from sales and project development of wind projects to procurement and implementation strategies. He works with Endurance's technical team on the company's product roadmap and business models. Prior to joining EWP Newcomb held several senior engineering roles at NREL.



**Tim Olsen- Director, Advanced Energy Systems LLC** for 24 years, providing engineering and project management consulting for wind and solar energy project development worldwide, plus wind turbine design, solar hybrid system engineering and

installation, energy efficiency design, and stakeholder mediation. Clients range from the Mercury Café to GE Energy, from NREL to factories in Central America. Sample projects include the 99 MW Duke Energy windfarm near Casper WY, and the 80 kW solar/battery system for Presidio Texas Wastewater Treatment Plant. Tim's degrees include BSME from CU Boulder, MSME from VPI&SU, and he is active with many civic organizations, including WorldDenver (YP Board), Colorado Renewable Energy Society (2006 president), and Engineers Without Borders (2005 co-chair). His certifications include Colorado Professional Engineer, NABCEP wind and solar, and BPI energy analyst.



**Brett Pingree- Vice President, Commerical, Endurance Windpower** Brett is a seasoned and accomplished Sales and Marketing Executive with over 15 years of experience and a strong background in senior sales leadership, market

creation, market development, strategy deployment and channel development, product commercialization and business planning. While at Northern Power Systems, Brett grew the commercial distributed wind business from a start up to \$30 million in annual revenue in just 3 years. As a distributed wind energy industry expert, Brett is a long serving member of AWEA's Small Wind Committee and currently serves as chair of AWEA's Distributed Wind Committee. He is also a founding member and a Board of Director for DWEA. Brett holds an Executive Leadership Certificate from the Wallace E. Carroll Graduate School of Management at Boston College (2005) as well as a Bachelor of Science in Environmental Science (1991) from the Univ. of Vermont. Brett was named AWEA's "Small Wind Advocate of the Year" in 2012.



**Heather Rhoads-Weaver – Founder and Principal Consultant, eFormative Options LLC** specializes in distributed energy policy and market analysis, funding development, and stakeholder communications. She has served as Secretary for DWEA's Board of Directors, cochair of DWEA's State Policy Committee, AWEA's first Small Wind Advocate, founder of NW Sustainable Energy for Economic Development, and worked for Global Energy Concepts and the National Wind Coordinating Committee. She holds an M.S. from the Univ. of Northern Iowa and a B.A. from Wesleyan University.



**Britton Rife – Policy & Communications Consultant, eFormative Options LLC** where she provides support for distributed energy policy and market analysis endeavors. Most recently she has worked to support strengthening and extending the Washington State Renewable Energy Cost Recovery Program and has provided communications and stakeholder engagement support for DWEA's SMART Wind project. Previously she was Sales & Customer Service Manager for Bergey Windpower where she educated customers about wind energy and available incentives, and designed and developed budgets for on and off-grid renewable energy systems. She also served as Project Coordinator for the Oklahoma Windpower Initiative where she organized renewable energy educational outreach events and managed the state anemometer loan program. She holds a B.A. in Environmental Studies from the University of Oklahoma.



**Darrin Russell, Manager of North American Sales, Northern Power Systems**



**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 Division Manager for CEC Energy, overseeing all project and company developments. Ryan enjoys activities that get him 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.



**Dr. Suzanne Tegen – Section Manager, Wind and Water Deployment, NREL** is a policy analyst by training and researches wind deployment issues such as radar, wildlife, grid integration, and public engagement. She estimates economic impacts (including jobs) from renewable energy resources using NREL's Jobs and Economic Development Impacts (JEDI) models and has written on economic impacts from small wind, utility-scale wind, offshore wind, and community wind projects. Suzanne also conducts research on the wind and water power domestic workforces and their training needs. Before joining NREL in 2004, Suzanne worked for the Center for Resource Solutions in San Francisco, and for the U.S. Antarctic Program at South Pole and McMurdo Stations.



**Dr. Arturo Villegas-Co-Founder, Chief Executive Officer, XTTis** the co-inventor of the XTT aerodynamic deflector technology. He received his PhD degree in Mechanical and Aerospace Engineering in May 2014 at Rutgers University (NJ).

Dr. Villegas main research of interest is within the area of fluid dynamics. This includes the study of wings and wind turbine aerodynamics, particle image velocimetry, Navier-Stokes equations, wind and water tunnel experiments, turbulent flows and electrokinetics. Dr. Villegas has published 5 journal publications on top scientific journals and 6 conference papers presented on main fluid dynamics conferences. His research has been funded by a collaboration between DOT and CAIT (Rutgers), and NSF SBIR.



**Dr. Robert Wills-Integrid** 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 New Hampshire.



**David Wooley -Of Counsel, Keyes, Fox & Wiedman** is an expert in energy and environmental law, having served as counsel to state government, a renewable trade association, private industry, and non-profit organizations. He represents clients before state electric utility commissions, federal courts, and federal and state environmental and energy agencies. His specialties include: energy efficiency, renewable energy and electric power resource planning; federal and state clean air policy, permitting and compliance; demand response and transmission policy; climate policy, planning and compliance; and government relations.