

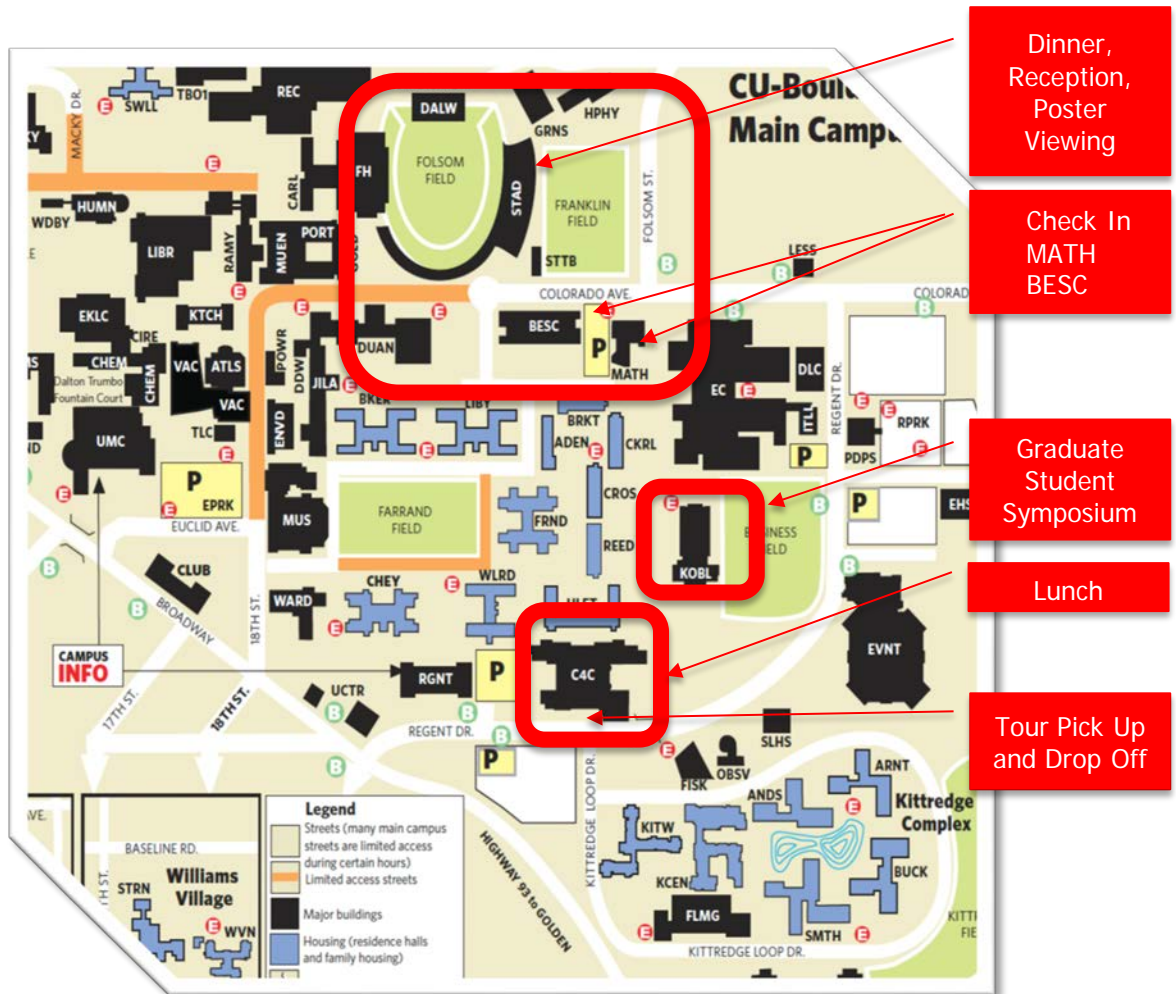


**Scientific Program and Agenda
NAWEA 2013 Symposium**

Aug. 6, 7, 8 with additional activities on Aug. 9
University of Colorado Boulder, Boulder, Colorado, U.S.

Symposium Building Locations

Check-In and Meeting Locations	<u>MATH Plaza</u> : Check-In and Registration
	<u>MATH Building</u> : Gemmill Library of Engineering, Mathematics and Physics (Mathematics Building, west edge of the Engineering Village, Folsom St. and Colorado Ave.)
	<u>BESC Building</u> : Benson Earth Sciences (Colorado Ave., west of MATH Building, across from stadium)
Dinner, Reception, Poster Viewing	<u>Stadium Club House</u> : Folsom Field Football Stadium, 5th floor (Directly across from BESC Building, on Colorado Ave.)
Lunch	<u>Center For Community (C4C)</u>
Graduate Student Symposium	<u>Koelbel Business</u>





Agenda NAWEA 2013 Symposium Day 1: Tuesday, August 6th, 2013

8:00-9:00 am	Check-in, Registration, Continental Breakfast NOTE: Check-in desk will be attended all day except during lunch	
Location	MATH Plaza	
9:00-10:30 am Location: MATH 100	Opening Session <ul style="list-style-type: none"> • Robert Thresher: NAWEA Executive Director and Research Fellow at NREL's National Wind Technology Center (NWTC) • Jose Zayas: Director of the Wind and Water Power Technologies Office in the Office of Energy Efficiency and Renewable Energy (EERE) at the Department of Energy (DOE) • Barb Goodman: Associate Laboratory Director, National Renewable Energy Laboratory, Welcome Keynote Addresses: <ul style="list-style-type: none"> • Sandy MacDonald, Director of NOAA's Earth System Research Laboratory and Chief Science Advisor for the Office of Oceanic and Atmospheric Research • Peter Hauge Madsen, Head of Department, Danish Technical University Department of Wind Energy, "Wind Energy System Science and Engineering" 	
10:30-11:00 am	Break – Coffee	
11:00-Noon	Plenary Speaker: Atmospheric Science and Wind Energy Julie Lundquist, Joint appointment, CU Boulder/NREL <i>Influences of wind farms on regional and global climates</i> Plenary Speaker: Business and Finance Bruce Bailey, AWS Truepower <i>The financial impact of wind plant uncertainty</i>	
Noon-1:30 pm	Lunch Location: Center for Community	
Location	Track A: BESC 180	Track B: BESC 185
1:30-3:00 pm	Parallel Session 1A: Wind Energy Science and Engineering I Chairs: Lance Manuel, Jim Brasseur, Denis Matha Matthew Churchfield, NREL <i>A Review of Wind Turbine Wake Models and Future Directions</i> Eric Paterson, Virginia Tech <i>Understanding the Aerodynamics and Aeroacoustics of Wind Turbine Blades</i> Eric Simley, University of	Parallel Session 1B: Social Acceptance Chairs: Ian Baring-Gould, Larry Flowers, Eric Lantz Ian Baring-Gould, NREL <i>An Overview of Social Acceptance With An International Perspective from IEA Task 28</i> Jeremy Firestone, University of Delaware <i>Social Acceptance of Offshore Wind Development</i> Jenny Bredt, Renewable Energy



	<p>Colorado <i>Design and Evaluation of a Wind Speed Estimator for Hub Height and Shear Components</i> Jayanarayanan Sitaraman, University of Wyoming <i>Wind Farm Simulations on Massively Parallel Computer Systems Using Methods of Incremental Complexity</i></p>	<p>Systems Americas Inc. <i>Social acceptance and permitting issues of large wind projects, a developer's perspective</i> Paul Medina, Siemens Energy Inc. <i>Engineering to reduce wind turbine noise</i> Jim Manwell, University of Massachusetts Amherst <i>Role and experience of universities working to address issues around local social acceptance</i></p>
3:00-3:30 pm	Break Networking and Refreshments	
3:30-5:00 pm	<p>Parallel Session 2A: Wind Energy Science and Engineering II Chairs: Takis Chaviaropoulos, Javier Sans Rodrigo, Scott Schreck, David Wood</p> <p>Emmanuel Branlard, DTU <i>Vortex wake models with application to yawed rotor</i> Hui Hu, Iowa State University <i>Wind Turbine Aeromechanics and Interferences among Multiple Turbines in Onshore and Offshore Wind Farms</i> Andrew Magstadt, University of Wyoming <i>Aeroelasticity in Dynamically Pitching Wind Turbine Blades</i> Richard Stevens, Johns Hopkins University <i>Large Eddy Simulation studies of average power output in large wind farms: effects of wind farm length and turbine placement</i> Lance Manuel, University of Texas <i>Analysis of the Evolving Environment and Loads on an Offshore Wind Turbine during a Simulated Hurricane</i></p>	<p>Parallel Session 2B: Business and Finance Chairs: Sara Tyler and Phil Dutton</p> <p>Maureen Hand, Strategic Energy Analysis Center, National Renewable Energy Laboratory <i>Tracking the Cost of Wind Energy</i> Phil Dutton, GL Garrad Hassan North America <i>What Makes a Wind Project Successful for an Investor or Lender?</i> Byron Boone, Boulder Wind Power Funding Innovation</p> <p>Presentations will be followed by a short panel discussion on wind industry funding, metrics, and tracking and an opportunity for audience Q&A.</p>
5:30-7:30 pm	<p>Poster session and social hour (Cash Bar) Location: Stadium Club House (5th floor)</p>	

Agenda NAWEA 2013 Symposium Day 2: Wednesday, August 7th, 2013		
8:00-9:00 am	Check-in, Registration, Continental Breakfast NOTE: Check-in desk will be attended all day except during lunch	
Location	MATH Plaza	
9:00-10:00 am	Plenary Speaker: Environmental Sciences Terry Root, Stanford University and Senior Fellow at the Woods Institute for the Environment <i>Assessing Biodiversity and Wind within a Climate Change Perspective</i> Plenary Speaker: Grid Integration and Management Mark Ahlstrom, WindLogics <i>Evolution of Forecasting, Operations and Market Design for Wind Integration</i>	
10:00-10:30 am	Break – Coffee	
Location	Track A: BESC 180	Track B: BESC 185
10:30 am to Noon	Parallel Session 3A: Atmospheric Sciences Chairs: Julie Lundquist, Melinda Marquis, Alan Zehnder Laura Bianco, University of Colorado, CIRES <i>Improving Wind Energy Forecasts through Assimilation of New Meteorological Observations: Results from the Wind Forecast Improvement Project (WFIP)</i> Petra Klein, University of Oklahoma <i>Lidar measurements of wind and turbulence for wind-energy applications</i> Eugene S. Takle, Iowa State University <i>CWEX: Overview of Results From Crop/Wind-Energy Experiments in Iowa</i> Branko Kosovic, NCAR <i>Hub-height wind speed in marine boundary layer under stable stratification</i>	Parallel Session 3B: Policy Pathways for Scaling Wind Chairs: Bruce Bailey, Edgar DeMeo, Kevin Doran Angela Cifor, J.D., RASEI, CU-Boulder <i>Shifting landscape for regional markets and RPS's</i> Fara Courtney, Executive Director, US Offshore Wind Collaborative <i>'Seascape' and regional power procurement approaches for offshore wind energy</i> Thomas Jenkin, NREL <i>The social cost of carbon and wind</i> The brief presentations will be followed by a panel discussion beginning with the chairs and the panelists and finishing with open Q&A from the audience.
Noon-1:30 pm	Lunch Location: Center for Community	



<p>1:30-3:00 pm</p>	<p>Parallel Session 4A: Grid Integration and Management Chairs: Mark O'Malley, Tom Acker, Charlton Clark</p> <p>John Zack, Michael Brower and Bruce Bailey, AWS Truepower <i>Opportunities for Synergistic Collaboration among the Public, Academic and Private Sectors in the Application of Wind Prediction Technology to Lower Grid Integration Costs</i></p> <p>Jacob Aho, University of Colorado <i>Controlling Wind Turbines for Ancillary Services: An Analysis of Capabilities and Trade-offs</i></p> <p>Michael Milligan, NREL <i>Markets, Next Generation Policies, Energy Imbalance Markets</i></p> <p>Debbie Lew, NREL <i>Cycling Impacts of High Penetrations of Wind and Solar: Results of WWSIS phase 2</i></p>	<p>Parallel Session 4B: Environmental Sciences Chairs: Taber Allison, Bonnie Ram</p> <p>The panel will examine effects beyond wildlife to include other important natural resources, such as water supply and include potential effects from future developments of offshore wind power.</p> <p>Jordan Macknick, NREL <i>Energy Choices and Water Use</i></p> <p>Patrick Gilman, DOE Wind and Water Program <i>Overview of Wildlife Concerns at Land-based Wind Sites</i></p> <p>Jeremy Firestone, University of Delaware <i>Offshore Wind Energy and Environmental Effects</i></p>
<p>3:00-3:30 pm</p>	<p>Break - Refreshments and Networking</p>	
<p>3:30-5:00 pm</p>	<p>Parallel Session 5A: Innovative / New Technology Chairs: Katherine Dykes, Andrew Meyers, Christopher Niezrecki</p> <p>Eric Smith, Keystone Tower Systems <i>On-site tapered spiral welding of wind turbine towers</i></p> <p>Glen Whitehouse, Continuum Dynamics <i>Variable Geometry Wind Turbine Technologies</i></p> <p>Josh Paquette, Sandia National Labs <i>The Design Challenges of Large, Deep-Water, Vertical-Axis Wind Turbine Blades</i></p> <p>Damon Vander Lind, Google <i>Airborne Wind Opportunities and Challenges</i></p>	<p>Parallel Session 5B: Electrical Transmission Chairs: J. Charles Smith, Miguel A. Ortega-Vazquez, David Berry</p> <p>Lynn Hecker, MISO <i>Transmission Planning for Variable Generation</i></p> <p>Warren Lasher, ERCOT <i>A Transmission Planning Case Study for Wind Integration – CREZ in ERCOT</i></p> <p>Keegan Moyer, WECC <i>Interconnection-Wide Transmission Planning Developments in WECC</i></p> <p>Bob Zavadil, Enernex <i>Dynamic Model Development and Validation for Stability Studies</i></p>
<p>5:30 pm Poster Viewing 6:30 pm Dinner</p>	<p>Poster Viewing and Conference Dinner Poster viewing will be available before dinner from 5:30 – 6:30 pm and at a desert reception following dinner. Location: Stadium Club House (5th floor)</p>	

Agenda NAWEA 2013 Symposium Day 3: Thursday, August 8th, 2013		
8:00-8:30* am	Check-in, Registration, Continental Breakfast NOTE: Check-in desk will be attended all day except during lunch Location: MATH Plaza	
8:30*-9:30 am *NOTE earlier start	Plenary Speaker: Education and the Academy Carlos Simao Ferreira, TU Delft <i>European experiences with Education and the Academy</i> Plenary Speaker: Policy Liz Salerno, American Wind Energy Association <i>The role of science and research in wind energy policy and deployment</i>	
9:30-10:00 am	Break – Coffee	
Location	Track A: BESC 180	Track B: BESC 185
10:00 am-11:50 am	Parallel Session 6A: Atmospheric Science and Turbine Technology Chairs: Will Shaw, Doug Cairns Baskar Ganapathysubramanian, Iowa State University <i>From Meteorological data to wind models: Constructing Low-Dimensional Stochastic Wind Models via a novel Temporal-Spatial-Stochastic Decomposition</i> Kenneth Carrasquillo <i>Power production fluctuations in wind turbines above complex terrains</i> Raj Rai, University of Wyoming <i>Effects of Varying Temporal and Spatial Scale Turbulent Inflow on Wind Turbine Performance</i> Paul Quelet, Univ. of Colorado <i>Comparison of Wind Retrievals from a Scanning LIDAR and a Vertically Profiling LIDAR for Wind Energy Remote Sensing Applications</i> Mark J. Balas, Univ. of Wyoming <i>Adaptive Control of Wind Turbines in Regions I & II and the Transition Region</i>	Parallel Session 6B: Education and Curriculum Chairs: James Manwell, Andrew Swift Suzanne Tegen, NREL <i>U.S. domestic wind work force, education, and training programs</i> Panel Session <i>This will be a panel session with representatives from several university programs across the nation. Each panelist has prepared PowerPoint slides for a 5 minute overview of the wind energy educational program their institution, to be followed by an open discussion of the NAWEA Education and Curriculum Mission.</i> Panelists: Tom Acker, Northern Arizona Carlos Simao Ferreira, TU Delft James Manwell, UMass Jonathan Miles, James Madison Jonathan Naughton, Wyoming Ganesh Rajagopalan, Iowa State Andrew Swift, Texas Tech University
11:50-Noon	Closing Remarks, Location: BESC 180 and 185	
Noon-1:30 pm	Lunch Location: Center for Community	

Meetings following the NAWEA Symposium
Afternoon: Thursday, August 8th, 2013

1:30-5:00 pm	<p>Graduate Student Symposium Location: Koelbel Building 1:30 p.m. - 3:00 p.m. Speakers 3:00 p.m. - 3:30 p.m. Break 3:30 p.m. - 5:15 p.m. Speakers</p> <p>A Graduate Student Seminar will be held Thursday August 8th immediately following the NAWEA Symposium. Inspired by a similar event in Europe, the purpose of the Graduate Student Symposium is to allow graduate students to present their research and discuss it with their peers in a more casual environment than a traditional conference. Faculty and other professionals will not be present during the presentations. Students who only have preliminary results or are early in their thesis are encouraged to present on their anticipated future research and get feedback from their peers. Time will be set aside for networking and discussion as well as presentations. Each presentation will be 15 minutes including questions. All graduate students who provide a thesis title will be accommodated. If you are interested in presenting, send your title by JUNE 28 to 2013Abstracts@nawea.org. Also, your title is required during registration. Students interested in publishing papers based on these presentations will be invited to submit manuscripts to the journal Wind Engineering by August 31 for review and potential publication in a special issue devoted to the NAWEA Graduate Student Symposium.</p>
	<p>NAWEA Board Meeting (all are welcome) Location: BESC 180 Break: BESC Courtyard Agenda:</p> <ol style="list-style-type: none"> 1. Introductions 2. Charter Status and Bylaws (www.nawea.org/charter) 3. Incorporation / Holding Organization: Budget, 501(c)(3); Wind Foundation offer discussion and decision 4. Membership 5. Review 2012 meeting Outcomes: Action Plans, Status Update, Standing Committees: Education, Conference, R&D, Member Management) 6. Next Steps

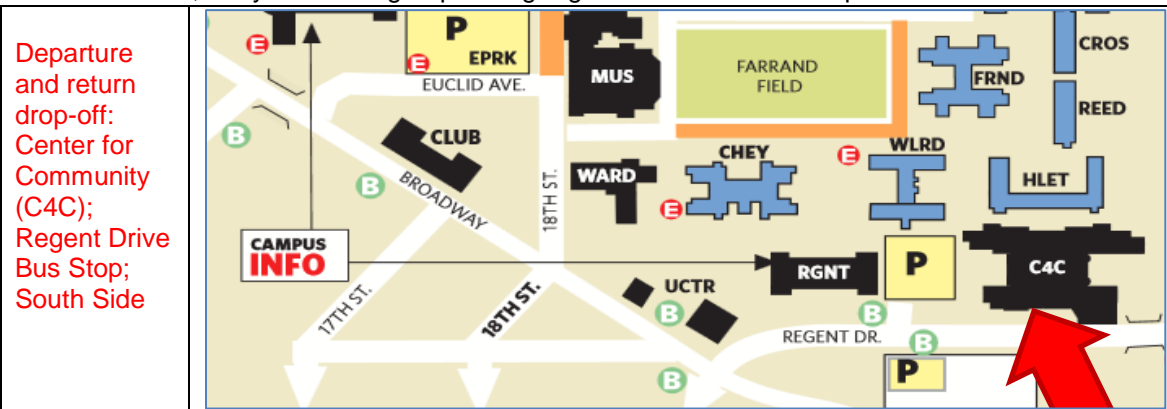


Activities following the NAWEA Symposium Friday, August 9th, 2013

8:00-9:00 am	Check-In, BESC 180 Pre-Registration is required, but <i>there is no fee.</i>
9:00-5:00 pm	FAST Training Seminar by Jason Jonkman, NREL
Noon-1:30 pm	Lunch Break (On Your Own)

Tours

There is no fee, but you must sign-up during registration to reserve a spot



Important Notes:

1. Food or refreshments are not provided during tours. Please bring water and/or necessary provisions you will need to make your trip comfortable.
2. For NREL tours, Non U.S. Citizens (this includes Canadian citizens, permanent resident aliens and resident aliens), must complete and submit electronically the foreign national data card to Sarah Barba (sarah.barba@nrel.gov) by close of business August 1 for pre-approval by NREL security. Once your foreign national data card has been pre-approved, Sarah or Samantha Rooney will notify you by e-mail letting you know what paperwork/identification you will need to bring with you on the day of your tour. This typically is your visa and passport but the requirement can vary.
3. For U.S. citizens, U.S. Government-approved Identification is required at either NREL or AFA
4. For AFA tours, Non-U.S. visitors will need passports & visas ID
5. Dress comfortably for warm weather and wear walking shoes. Shorts or sandals are NOT allowed in NREL laboratories.

<p>Please arrive 10 minutes prior to scheduled departure to check-in and load the vehicle.</p>	<p>Tour 1. Air Force Academy (AFA) Cancelled Departure Time: 8:00 am (Arrive at 7:50) Arrive AFA: 9:30 am Depart: 12:00 pm Arrive Boulder: 1:45ish pm</p> <p>Tour 2. NREL South Table Mountain (STM) campus, Golden, Colorado Departure Time: 8:45 am (arrive at 8:35 am to check-in and load on bus) Arrive STM: 9:30 am Depart: 11:30 am Arrive Boulder: 12:30 pm</p> <p>Tour 3. NREL National Wind Technology Center (NWTC), near Boulder Departure Time: 9:30 am (arrive at 9:20 to check-in and load on bus) Arrive NWTC: 10:00 am Depart: 11:00 am Arrive Boulder: 11:45 am</p>
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