

Solutions-Oriented Group Faculty

1. Designing and Constructing a Net-Zero Energy Building

Faculty Leaders:

Robert Powell is an Assistant Professor in the Architectural Engineering Program at NC A&T State University. He teaches aspects of architectural design and building construction based on many years of professional practice. This has included building design and construction administration as a practicing architect, building contractor, affordable housing developer, and energy consultant. He is also a long term advocate and practitioner of sustainable development consulting with neighborhoods using open participatory design methods to identify effective use of green technologies. Mr. Powell received his undergraduate degree at Stanford University in Architectural Engineering and his Masters in Architecture from M.I.T. He currently serves as a Co-Chair of the Greensboro Community Sustainability Council and on the board of the NC Advanced Energy Corporation.

Jeffrey S. Tiller, PE is Chair of the Department of Technology and Environmental Design at Appalachian State University and a registered professional engineer in Mechanical Engineering in North Carolina. He holds Bachelor degree and a Master degree in Industrial and Systems Engineering from the Georgia Institute of Technology. He has a long career of research and development work in the area of energy efficient buildings and renewable energy systems. He is one of the founders of the Southface Energy Institute, an internationally recognized organization located in Atlanta, Georgia. Southface has been working in the area of sustainable buildings for 35 years. His publications include the Builders' Guide to Energy Efficient Homes and Home Energy Projects for a variety of states in the Southeast, a chapter "Energy, HVAC, and Water" in Environmentally Responsible Design published by Wiley, two editions of the "North Carolina State Energy Plan", the "North Carolina Passive Solar Planbook," substantial contributions to the "2012 North Carolina Energy Code," and a variety of other publications and journal articles.

In addition, he has been involved in a wide variety of energy-related projects. In the area of Net Zero Buildings, he has designed and managed construction of a variety of combined solar greenhouse/ photovoltaic/ solar thermal projects at high schools in Georgia and South Carolina, led the design and installation effort for North Carolina's first Zero Energy Home built by Catawba Valley Habitat for Humanity in Hickory, NC, developed the concept and assisted with the ASU-E3 home on the Appalachian State University campus, and has served as a technical advisor on Appalachian State's two Solar Decathlon projects. He has also served as the commissioning agent on two LEED projects and designed over 100 high efficiency commercial and residential HVAC systems. He has given hundreds of presentations

and workshops on topics related to high efficiency and sustainable buildings at national and international conferences, as well as professional workshops.

2. Understanding Renewable Energy System Partnering and Finance

Faculty Leaders:

David Tucker, Project Director, Environmental Finance Center, UNC Chapel Hill

Cindy Register, State Construction Office – Assistant Director – Design and Construction Services Section

I am NC Registered Professional Engineer with a BS in Electrical Engineering from NC State. Prior to my current job with State of North Carolina, I worked in the Electrical Utility field first as an engineer with Duke Power Company and later as engineer with two consulting engineering firms that provided a variety of engineering services for rural electrical cooperatives and electrical municipalities. As a consulting engineer, I conducted a number of energy audits for industrial and commercial businesses that were looking for ways to curtail load during peak usage hours to take advantage of energy load-shed rate schedules offered by municipalities. Work included designing on-site generator systems for peak shaving. In my current position with State Construction Office, I manage a group of thirteen, consisting of engineers, engineering technicians, and electrical inspectors. This group is responsible for managing and monitoring capital improvement projects for the Department of Administration that includes about 100 assigned buildings. Our group has participated in a variety of LEED and energy improvement projects, including two energy performance contracting projects, the Green Square project, and a number of small ARRA funded energy savings projects. Our group is also responsible for the implementing and reporting on the Energy Management Plan for Department of Administration. I am also a current member of the North Carolina Building Code Council and work on a number of committees, including chairing the Electrical Ad-hoc Committee.

Vanessa King serves as the Sustainability Coordinator and the Executive Assistant of The Biltmore Estate in Asheville, NC. Before joining the Biltmore Company, Vanessa spent her time traveling, working on her family farm, and finishing her business degree in Travel and Tourism Development at Western Carolina University. Vanessa became particularly interested in sustainable tourism while living overseas for twelve years in developing nations where you find tourism centers that have exhausted the natural environments as well as the local cultures. In addition, King is also a Certified Renewable Energy Manager, and has been instrumental in the development of Biltmore Estate's renewable energy portfolio, as well as being an important partner in developing the company's sustainability goals.

3. Creating and Managing an Energy Savings Performance Contract

Faculty Leaders:

Mike O'Connor is the Physical Plant Director for Appalachian State University located in Boone, North Carolina. He is a retired Captain who served in the United States Navy Civil Engineer Corps for 24 years before retiring in 2006 and joining the Appalachian State University family. As the Senior Facilities Officer at the university, he oversees facilities planning, design and construction, maintenance, operations, utilities, landscaping, housekeeping, and the motor pool. In addition he is responsible for the New River Power and Light Electric company; a municipal electric utility. He earned his Bachelor of Science in Mining Engineering from Penn State, his Masters of Science in Environmental Engineering from the University of Maryland and he attended the Duke Fuqua School of Business Advanced Management Program. He is a registered Professional Engineer in the States of California and North Carolina.

Jorge Quintal, serves as Associate Vice Chancellor for Facilities at the University of North Carolina at Greensboro since 2008. He is responsible for an operating annual budget of approximately \$22M and a staff of 246 charged with master planning, design and construction of university projects as well as operations of university facilities including grounds, housekeeping, central generation and distribution of utilities, building maintenance, waste reduction, customer service, assessment, sustainability and HUB. From 2000 to 2008, Jorge served Winston-Salem State University as Associate Vice Chancellor for Facilities and Director of Planning and Engineering. From 1987 to 2000, Jorge served the Facilities organization at North Carolina State University as Manager of Design Services, Associate Director for Construction Management and project manager. Jorge is professional engineer registered in North Carolina and is currently the chairman of the North Carolina State Building Commission.

4. Legislative Consensus Building for Creating Effective Energy Related Policy

Faculty Leaders:

Michael Youth is Counsel & Policy Director for the NC Sustainable Energy Association. Michael received his undergraduate and law degrees from the University of North Carolina at Chapel Hill; he also recently received an M.S. in Forestry and Environmental Resources Policy and Administration from North Carolina State University. After several years in private practice, Michael moved into the public sector in the early 2000s. For almost seven years, he served as a North Carolina Assistant Attorney General, providing counsel and representation to the North Carolina Department of Revenue. He joined the NC Sustainable Energy Association at the end of 2011.

Terrance C. Feravich, Associate Vice President Finance and University Property Officer and Chief Sustainability Officer at the University of North Carolina. Feravich is responsible for all capital improvements, operations, sustainability, real property, and historically underutilized businesses related policies and programs within the University of North Carolina, a system of 16 constituent universities, 1 constituent high school, and affiliated institutions serving over 215,000 students.

Dr. Susan McCracken is the Director of External Affairs. Dr. McCracken previously was Director of Sponsored Programs in the Office of Research and Sponsored Programs in Appalachian's Cratis D. Williams Graduate School. From 2004-08, she directed GEAR UP North Carolina for The University of North Carolina General Administration. Under her leadership, North Carolina received a \$19 million GEAR UP state grant in 2005 and \$3.7 million for the College Access Challenge Grant in 2008. As GEAR UP North Carolina director, she piloted the first-ever North Carolina College Application Week and spearheaded efforts to expand the program statewide. Prior to 2005, she directed Appalachian's College Awareness Programs including GEAR UP and Upward Bound from 1992-2004, and the Appalachian Higher Education Access Network from 1998-2004. During this time, she secured more than \$5 million in externally funded grants for college access programming for western North Carolina. As Director of External Affairs, Dr. McCracken is responsible for fostering and maintaining relationships with local, county, state and federal elected officials. She represents the university as liaison to the N.C. General Assembly, the UNC General Administration Legislative Affairs Office, the U.S. Congress and federal agencies, the Watauga County Commissioners, and Boone's Town Council. She also represents the chancellor at various conferences, meetings and other forums. She provides consultation and support to federally sponsored programs and seeks external funding for university priorities. Dr. McCracken has an Ed.D. in Educational Leadership, an Ed.S. in Higher Education Administration, and a Masters of Arts in Student Development from Appalachian. She has a Bachelor of Arts degree in American Studies from UNC Chapel Hill.

5. Utilizing Energy Performance Data in Campus Connections and Building Automation

Faculty Leaders:

Jerry Marshall earned his Bachelor's degree in Business and Organizational Leadership from Brevard College and received an Energy Management Diploma from North Carolina State University. He is recognized as a Professional Energy Manager by the Institute of Energy Professionals. Mr. Marshall has worked in facilities operations and energy management for 24 years and all of that time at institutions of Higher Education. He served in the private sector as a Project Manager and as a Physical Plant Director before spending the last six years in the public sector as the Energy Manager for Appalachian State University. During his time at ASU overall energy consumption has been reduced by 30% for a total energy cost avoidance of nearly \$10,000,000. Mr. Marshall has played

a prominent role in three Energy Savings Performance Contracts of more than \$5,000,000 each and is now working on two more including a second performance contract for ASU valued at more than \$16 million and the first North Carolina *statewide* performance contract being conducted through the UNC General Administration valued at close to \$20,000,000.

Len Hoey joined the N.C. Energy Office in January 2005. Len is the Engineering Architect Manager for the Energy Office and provides leadership for the Utility Savings Initiative. USI is a statewide lead-by-example program created to reduce energy consumption and costs in public facilities. In 2007, The Council of State Governments recognized the USI program with an Innovations Award. The program was initially established to provide assistance to state agencies and UNC institutions. Since the program's inception in 2002, the state has avoided more than \$550 million in utility costs and 1.9 million metric tons of CO₂e through efficiency efforts. The USI program now supports all public sector units including community colleges, K-12 public schools, county and local municipal governments. Len also oversees support and assistance for Performance Contracting in the public sector. In 2010 the Association of Energy Engineers recognized Len with the Region 2 Energy Manager of the Year Award.

6. Integrating Energy and Sustainability into the Academy Experience

Faculty Leaders:

Mary-Ann Ibeziako, Prior to being appointed as the *Director of Energy Services and Sustainability*, Ms. Ibeziako was the *Energy Manager* under the recently completed Federal Energy Management grant program. She came to North Carolina A & T State University after nearly 19 years of service in both the private and public sectors. She was most recently the Chief Mechanical Engineer at the Cleveland Hopkins International Airport where she was responsible for over \$55 million dollars' worth of capital improvement projects namely the design/construction of Runway expansions/rehabilitations, Taxiway relocations/rehabilitations and most recently the Power Enhancement Distribution project which was comprised of the design and installation of the main emergency back-up generators and also the redistribution of power between the Airport's two main substations to improve efficiency and ensure reliability. As the Chief Mechanical Engineer at the Cleveland Hopkins International Airport, Ms. Ibeziako's office was also responsible for the Mayor of Cleveland's Energy Conservation Policy - 2019 Reduction Strategy. She holds both a B.S. and M.S. in mechanical engineering from the Cleveland State University, as well as an MBA from the Weatherhead School of Management - Case Western Reserve University, also in Cleveland. She is also currently in the process of completing her PhD in Systems Engineering at the Cleveland State University with a focus on integrated renewable energy systems' design for greenfield facilities and developing countries. She has completed all required coursework and is hoping to partner with the NC A&T's Joint School of Nano-science/Nano-engineering to complete her dissertation research in the

development of commercially viable microbial fuel cells for the generation of power in the wastewater industry. She is a Fellow of the Cleveland Leadership Academy, as well as an active member of Sustainability Cleveland – a group responsible for the design and development of a thriving and resilient Cleveland region that leverages its wealth of assets to build economic, social and environmental well-being for all.

Aaron S. Allen is Associate Professor of Musicology in the School of Music, Theatre, and Dance of the University of North Carolina at Greensboro, where he also serves on the faculty committee for the Environmental Studies Program and as the University's Academic Sustainability Coordinator. After earning a B.A. in music and a B.S. in environmental studies from Tulane University, Dr. Allen received his Ph.D. in music from Harvard with a dissertation on the nineteenth-century Italian reception of Beethoven. He has published and given papers on Italian Beethoven reception, ecomusicology, and campus environmental issues. Dr. Allen spent 2011-12 as a Fellow of the American Academy in Rome. Dr. Allen co-founded and chaired the Ecocriticism Study Group of the American Musicological Society and the Ecomusicology Special Interest Group of the Society for Ethnomusicology. He is currently working on two ecomusicology book projects: *The Tree that became a Lute: Musical Instruments, Sustainability and the Politics of Natural Resource Use* (University of Illinois Press, co-authored with Jennifer Post and Kevin Dawe) and *Ecomusicology: A Field Guide* (co-edited with Kevin Dawe). Dr. Allen is originally from West Virginia, and his interests as an outdoorsman and woodworker result from his time on the family farm, where he hand built a solar-powered log cabin with and for his family.

7. How Smart Grid Technologies will Impact Your Campus in the Future

Faculty Leaders:

Liz Bowen is currently the Green Development Coordinator at NC State University. Her projects include pursuing more solar installations on NC State University campus, developing a vision for the campus smart grid demonstration, and helping integrate sustainability in campus construction projects, including working with the LEED rating system on several construction projects valued at a total of over \$300 million. Before joining NC State, Liz worked with an engineering firm as a LEED specialist and also developed sustainability and energy efficiency programs for retail, nonprofit and government sectors including EarthFare, Hawaii Habitat for Humanity and Clean Edison. She currently serves as part of the Department of Energy Solar Instructor Network and as the NC USGBC Board of Directors SERC Representative. Liz earned a BS in geology and environmental geosciences from the College of Charleston, SC, where she was president of the student organization Alliance for Planet Earth.

Rogelio Sullivan has over twenty years experience managing research and development of advanced energy systems for a variety of applications. Through forging partnerships with universities, the national labs, and industry, he has worked to develop and deploy

energy solutions for the automotive and electric power sectors. His current position is Managing Director of the FREEDM Systems Center and the Advanced Transportation Energy Center at North Carolina State University. Mr. Sullivan received his Bachelor of Science in Mechanical Engineering and Master of Business Administration Degrees from the University of Maryland.

8. Developing Efficient and Sustainable Transportation Infrastructure, Policies, and Processes

Faculty Leaders:

Suzanne Williams is Associate Director of Campus Access and Transportation Demand Management at the University of North Carolina at Greensboro. In collaboration with student, staff, faculty, and community partners, she is committed to the continued implementation of UNCG's Transportation Master Plan and Bicycle Master Plan. She is an advocate of multi-modal sustainable transportation options including walking, biking, car sharing, ride sharing, and public transit. An alumna of UNCG, Suzanne brings over 20 years experience to her current position. She also has worked in the private sector as a small business owner, consultant, and marketing administrator.

Amanda Simmons graduated from Appalachian State University with a BS in Communication. She took a graduate course at UNCG called Livable and Sustainable Cities, where she learned the importance of public transportation for the community and environment. This interest led her to work at the Piedmont Authority for Regional Transportation (PART) in Greensboro, where she began her career in Transportation Demand Management. After 4 years, she accepted a position at Triangle Transit in Durham, where she worked until October 2012. Now, Amanda is continuing her career as the Transportation Demand Manager at UNC-Chapel Hill. Amanda currently lives in Durham with her husband, Michael. They enjoy hiking, canoeing, and camping in the mountains.

9. Solar Decathlon Europe 2014: An Energy-Plus, Mixed-use, Campus Housing Case Study

Faculty Leaders:

Mark Bridges, Sustainable Construction and Design Student, Appalachian State

Scott Hopkins, Sustainable Construction and Design Student, Appalachian State

Susie Westrup, Sustainability Specialist, Balfour Beatty Construction

Jamie Russell, Associate Professor, Building Science, Appalachian State

Jason Miller, Assistant Professor, Building Science, Appalachian State