

Dr. Efraín O'Neill Carrillo

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Bio: Dr. Efraín O'Neill-Carrillo is a Professor at the Electrical and Computer Engineering (ECE) Department of the University of Puerto Rico-Mayagüez (UPRM). He holds a PhD in Electrical Engineering from Arizona State University (1999), an MSEE from Purdue University (1995) and a BSEE from UPRM (1994). His education and research interests include: power quality, power distribution systems, engineering education, energy policy, sustainable energy, distributed generation, social and ethical implications of engineering and technology. He has authored or co-authored over 60 peer-reviewed journal and conference papers, and has presented his research and education work at international and national conferences, as well as in industry forums. Some of the graduate and undergraduate courses he usually teaches are: Introduction to Power Systems, Design Projects in Power Systems, Electrical Systems Design (NEC), Power System Analysis, Fundamentals of Transformers and Electric Machinery, Power Electronics, Electric Power Quality, Advanced Energy Conversion, The Electrical Engineering Profession in Society, and Public Policy in Electrical Engineering.

He was the President of the ECE Power Engineering Committee (2000-2007), responsible for providing academic and administrative support for twenty undergraduate and graduate courses in power systems and power electronics, serving 200 students per semester. He led UPRM's Power Engineering Group (10 professors) in efforts to develop research/teaching proposals and industry collaborations, resulting in five major research and education awards. Dr. O'Neill was the Principal Investigator (PI) of three major National Science Foundation (NSF) projects: "Acquisition of Instrumentation for the Electric Energy Processing Systems Laboratory," Major Research Instrumentation (MRI) Award; "Integrating Laboratory Practices and Undergraduate Research to the Power Engineering Curriculum at UPRM," Course, Curriculum and Laboratory Improvement (CCLI) Award, and the prestigious NSF CAREER Award for "Power Quality Research and Education: A New Power Engineer for Today's Energy Challenges." Dr. O'Neill was also the Co-PI for "Intelligent Power Routers for Distributed Coordination in Electric Energy Processing Networks," NSF/ONR EPNES Award, and "Failure Probabilities and Parameter Estimation of Synchronous Generators" NSF EEC Award associated to the Power Systems Engineering Research Center (NSF I/UCRC). Dr. O'Neill was the founding Director (2007-2010) of the Institute for Tropical Energy, Environment and Society, leading a group of 15 professors from 10 disciplines in establishing links between energy research and society and influencing energy policy in Puerto Rico (<http://iteas.uprm.edu>).

Dr. O'Neill was also the Education Coordinator at UPRM for the NSF's Center for Power Electronics Systems (CPES) from 2000-2008. He was responsible for education project management that reached over 1,000 graduate, undergraduate and pre-college students, including a joint REU Program with Virginia Tech. From 2002 to 2004 he also led the Electrical Engineering (EE) curriculum revisions that will make the EE curriculum more flexible, responsive to accrediting needs, and more socially relevant (impact to over 800 undergraduate students). Other integrative

research-education activities include leading the integration of laboratories and undergraduate research to the power engineering curriculum, and establishing an Energy Systems Instrumentation Laboratory (ESIL) used by undergraduate students for integrated laboratory-class activities, design projects, and collaborative learning activities. ESIL also hosts the “Energy Systems Seminar Series” (ES3) a forum organized by Dr. O’Neill for students, professors and industry speakers to present seminars and short courses. He was also Coordinator for Social, Ethical and Global Issues in Engineering, providing education materials and practices that connect engineering and society in six Engineering programs (2006-2009). He was the Engineering Representative to the UPRM Institutional Review Board (2006-2007). He was the PI in a distance learning Masters Program on sustainable energy between UPRM and University of APEC (UNAPEC, Dominican Republic) which was followed by work in an undergraduate option in renewable energy at UNAPEC. He is Associate Director of CIVIS: Center for Resources in General Education (since 2008), assisting in the administration of the Center, as well as developing student learning modules (e.g., sustainability, ethics), a sustainable energy initiative and coordinating the interaction and work of professors from various disciplines in UPRM (<http://www.uprm.edu/news/articles/as2008138.html>).

Dr. O’Neill’s has industrial experience with CPI del Caribe (Dorado, PR) and TOR Engineering (Phoenix, AZ). He was Visiting Researcher at the Advanced Research Institute of Virginia Tech, Arlington (Summer 2010), the Centre for Economic Renewable Power Delivery at the University of Glasgow, Scotland (June 2004), and the Puerto Rico Electric Power Authority (Summer 2002). He has advised city governments (<http://www.uprm.edu/news/articles/as2010112.html>) and state agencies in Puerto Rico on energy projects. For example, he is one of the authors of the study “Achievable Renewable Energy Targets for Puerto Rico’s Renewable Portfolio Standard” presenting the potential of renewable energy in Puerto Rico (<http://www.uprm.edu/aret>). He is also very active in the energy policy debate in Puerto Rico, authoring “Una Nueva AEE” a Spanish document that traces the history of the Puerto Rico Electric Power Authority, and presenting potential reforms to the Island’s electric system (<http://iteas.uprm.edu/recursos.php>). Dr. O’Neill is founding member of the Puerto Rico Electric Energy Round Table, a multi-sector Group that works on technical and policy alternatives for the Future of Puerto Rico’s Electric System, acting as the group Coordinator from 2008 to 2010 (<http://iteas.uprm.edu/mesa.html>).

In terms of professional service, Dr. O’Neill is part of the National Science Foundation’s Advisory Committee for International Science and Engineering which provides advice concerning research and education involving U.S. science and engineering community in a global context (<http://www.nsf.gov/od/oise/advisory.jsp>). He is an IEEE EAC Program Evaluator (ABET) since 2006 and an Energy Advisor for AARP-Puerto Rico since March 2011. He organized and served as the Founding Chair of the Power Engineering Society (PES) Chapter of the IEEE Western Puerto Rico Section (2004-2009). He also organized and was the Founding Chair of the IEEE Western PR Joint Chapter of the Education Society/Society on Social Impact of Technology (2006-

2008). Within IEEE he is part of the Power & Energy Society, Power Electronics Society, Industrial Electronics Society, Society on Social Implications of Technology, and Education Society. He is a Senior Member of IEEE and a member of Tau Beta Pi (the National Engineering Honor Society). He has been review panel member for NSF and DOE proposals and projects, as well as reviewer of IEEE Transactions, Proceedings and conference papers. Dr. O'Neill was Associate Editor of the IASTED International Journal of Power and Energy Systems (2001-2007).

Dr. O'Neill is a Registered Professional Engineer in PR, where he is part of the State Society of Professional Engineers and Land Surveyors (CIAPR). Within CIAPR he has been organizer, leader and presenter of continuing education conferences, short course and seminars for over 2,000 professional engineers in Puerto Rico since 2002. Two salient and very successful activities were an Industry-Academia Symposium and an Energy Experts Summit. He has served in various professional committees of CIAPR including the Evaluation of Renewable Energy in Puerto Rico (2007-2008) and the Evaluation of the Technical Administration of the Puerto Rico Electric System by the Puerto Rico Electric Power Authority during the Tropical Storm Jeanne (2004-2005). He was also Editor-in-Chief/President of the Board for Dimension, the Technical Magazine of the CIAPR (2006-2007).

His community service includes: Cub Scout Den Leader (2007-2012); Member of the Strategic Planning Committee, Mayaguez Methodist Church (2009); VP of the Pastoral Affairs Committee, Río Piedras Heights Methodist Church (2003-2006); Collaborator and Mentor of students for the Institute for the Development of Communities (since 2002); Education Committee President of PR-One Million Solar Roof Initiative (2001). He has led demonstrations in power engineering and renewable energy to the general public during UPRM's Open-House activities, and for various K-12 outreach programs since 2002.

Dr. O'Neill is a firm believer of the balanced scholarship proposed by Ernest Boyer in his classic work *Scholarship Reconsidered* (1990), where teaching, research and service are equally regarded as valuable components of scholarly activity. Service, in the comprehensive sense of the term, is really all that is done at a University, and should include service to one's profession and to society at large. Dr. O'Neill believes it is of utmost importance to provide a social context in engineering education. Engineering professors should be an example by actively participating in social issues involving their expertise. His views and work on integrative research and education activities, and his professional service have earned Dr. O'Neill UPRM's Outstanding ECE Professor of the Year Award twice (2001-2002, 2004-2005), the Distinguished Electrical Engineer of the Year Award from the CIAPR in May 2004, an Early Promotion to Full Professor from UPRM in November 2004, and the IEEE/PES Walter Fee Outstanding Young Engineer Award in June 2005. He was part of the group that was awarded the 2009 Outstanding Electrical Engineering Project from CIAPR for the "PV Lab in Casa Pueblo, Adjuntas" Team: UPRM, Solartek & Casa Pueblo (<http://www.uprm.edu/news/articles/as2009132.html>).