

Name: Ronald D. Critelli, Vice President – Power Delivery Real Zero		
Company: Florida Power & Light	Email: (b) (6)	
Address: (b) (6)	Phone: (b) (6)	

Role in this project

FPL Power Delivery leadership representation and ultimate responsibility for the project including budget, project management, and personnel.

Summary of Relevant Background

Over 36 years of electric industry experience with FPL in various engineering and leadership roles focused on Power Delivery, transmission and distribution electric grid construction, operations, and maintenance.

Education

Bachelor of Science – Electrical Engineering – North Carolina State

Associate of Science – Engineering Sciences – Dutchess Community College

Associate of Science – Computer Science & Mathematics – Dutchess Community College

Licensed Professional Engineer – State of Florida

Six Sigma – Green Belt Certified

Professional Experience

Vice President – Power Delivery Real Zero	Currently
Executive Director – Power Delivery Engineering & Technical Services	2022-2023
Director Power Delivery Engineering & Technical Services	2014 – 2022
Senior Director – Transmission Engineering & Technical Services	2010 – 2014
Director – Transmission Project Management & Engineering	2007 – 2010
Director – Transmission & Substation Operations	2005 – 2007
Manager – Substation Operations	2003 – 2005
Manager – Power Delivery Design & Standards	1999 – 2003
Manager – Protection & Control Operations and Design	1997 – 1999
Project Manager – Power Delivery Projects	1995 – 1997
Project Engineer – Power Delivery Projects	1991 – 1995
Staff Engineer – Protection & Control Operations	1990 – 1991
Field Engineer – Protection & Control Operations	1987 – 1990

Current Academic, Professional, or Institutional Appointments

Institute of Electrical and Electronic Engineers - Member

Power Engineering Society - Member

Association of Edison Illuminating Companies – Electric Power Apparatus Committee Member

Edison Electric Institute – Transmission & Substation Committee (Past Member and Vice Chair)

Topic 2 Resume

Name: Rick Teigland, Grid Automation Manager	
Company: Florida Power & Light (FPL)	Email: (b) (6)
Address: (b) (6)	Phone: (b) (6)

Role in this project

Serving as the Principal Investigator and overall Project Manager for the implementation of the Smart Manhole and Vault Monitoring Project (MVMP).

Summary of Relevant Background

Over 34 years of electric industry experience with FPL in various engineering and leadership roles focused on distribution grid planning, resiliency, and smart grid application.

Education

University of South Florida, Business Administration, MBA, (b) (6)
University of Florida, Mechanical Engineering, BSME, (b) (6)

Training

Six Sigma – Green Belt Certified

Professional Experience

March 2018 – Present: FPL, Manager, Reliability Grid Automation: Responsible for the overall strategy and deployment of Grid Automation devices across FPL's 43 county service territory. 1) Providing technical leadership and guidance to the Grid Automation team to maximize the deployment and use of distribution smart grid devices and supporting applications to improve reliability. 2) Oversees a departmental budget of \$22M and provides the strategy for the annual deployment of over \$100M worth of smart grid devices. 3) Maintains strong relationships with 3 key strategic partners that contribute to the deployment of smart grid devices and applications. 4) Lead the Storm - Forensics Smart Grid Team.

January 2014 – March 2018: FPL, Principal Engineer, Reliability Grid Automation: Responsible for Grid Automation device testing and deployment. 1) Provided technical expertise for the Distribution Grid Automation devices and served as the primary contact with the communication vendor, Silver Spring Networks. 2) Coordinated the 2015 FCI deployment plan for an additional 8,700 devices. 3) Responsible for processing all DA communication related invoices from both SSN and S&C.

January 2010 – December 2013: FPL, Distribution Technical Lead – Energy Smart Florida: Responsible for the Distribution Smart Grid deployment of DA devices. 1) Coordinated efforts across Department and Business Units for the engineering, construction, and communication aspects of deploying over 6,000 distribution automation devices with a \$40M spend across 3 years. 2) Provided leadership to Project Managers, Production Leads, Product Engineers, and Engineers for successful implementation. 3) Worked closely with Product Engineering on the evaluation of several new products including: 2-way capacitor controllers, vault and transformer monitors, telemetry sensors and communicating FCI's.

January 2008 – January 2010: FPL, Distribution Lead – Storm Secure: Responsible for the project management of the Storm Secure Program. 1) Coordinated the development and implementation of a centralized \$80M feeder hardening program in 2009 and \$45M in 2010. 2) Developed a 3-Year hardening program for submittal to the Public Service Commission.

Topic 2 Resume

January 1999 – January 2008: FPL, Supervisor, Distribution Planning: Responsible for supervising the North, East, & West Planning groups. 1) Coordinated the development of the 2000 to 2007 Expansion Plan for the North, East, and West areas. 2) Actively involved with several teams including the cross-functional Common Criteria Team, Feeder Configuration, and the ABB study team.

January 1995 – January 1999: FPL, Senior Engineer, Distribution Reliability Planning: Responsible for the accountabilities listed under Engineer I below for the Gulf Coast Area plus: 1) As the West Lead, coordinated the 1996 and 1997 System Improvement Budget. 2) As the East and West Lead, coordinated the 1998 System Improvement Budget. 3) As the North, East, & West Lead, coordinated the 1999 Expansion Plan.

January 1991 – January 1995: FPL, Engineer I, Distribution Reliability Planning: Responsible for the following accountabilities in Distribution and Substation Planning: 1) Forecast loads and capacity needs for distribution and substation facilities and provide switching recommendations. 2) Prepare budget packages with costing for future projects and ensure projects are engineered and constructed on time. 3) Provide feeder coordination on distribution equipment including fuses, oil circuit reclosers, throwover switches, and relay settings for breakers. 4) Perform fault current, voltage, and power factor analysis on feeders including calculations for secondary fault current and motor starting.

August 1988 – January 1991: FPL, Engineer II, Construction Services: Responsible for the design, schedule, material inventory and all negotiations associated with new construction projects within a defined geographical area.

Professional Licenses, Awards, and Honors

Professional Engineer, Florida, License# 46766

Publications

Rick Teigland and David Herlong, Sensors Raise System Intelligence, *Transmission & Distribution World*, Vol. 68, No. 1, Page 20, January 2016.

Name: Benny Pazhayattil	
Company: Florida Power and Light	Email: (b) (6)
Address: (b) (6)	Phone: (b) (6)

Role in this project

To provide Technical guidance to Smart Grid Manholes and Vault Monitoring project, through Grid Resilience and Innovation Partnerships (GRIP).

Summary of Relevant Background

As the Subject Matter Expert of Medium to Low voltage transformers and Monitoring devices at Florida Power and Light (FPL), I have a unique technical understanding of the device being monitored and the monitoring device. My previous experience in supporting outage restoration will have an immediate impact as we execute the project and more data is available to us.

Education

Florida Atlantic University, Boca Raton, Florida
Bachelor of Science in Electrical Engineering

(b) (6)

Professional Experience

Senior Engineer, Transformer Fleet Team

May 2022 - Present

- Subject Matter Expert for Substation Monitoring Devices
- Subject Matter Expert for Distribution Monitoring Devices
- Interim Subject Matter Expert for Medium to Low voltage Transformers
- Creating and Updating product specifications for Medium to Low voltage Transformers
- Conducting root cause analysis
- De-rating and Re-rating substation Transformers

Senior Engineer, PDDC

September 2016 – May 2022

- Supported Distribution and Transmission outages
- Calculated SAIDI via TRITS
- Coordinated and Executed Distribution and Transmission settings changes
- Coordinated and Executed DFR maintenance
- Coordinated and Deployed New Password Application
- Monitor and Report special events
- Troubleshoot abnormal Distribution and Transmission events
- Created New, and improved our existing PDDC processes

P&C Engineer, Central P&C Service Territory

January 2013 - September 2016

- Worked on Distribution, Transmission and Generation capital projects and maintenance
- Assisted with restorations and callouts
- Troubleshooting FTO(s) and communication devices such as RTU, RCP, SCP, Phasors and Carriers
- Part of the Battery fleet team
- Supported commissioning of two NextEra Energy Projects at Forney and Adelanto

FPL Intern, Jupiter West

May 2012 - August 2012

- Worked in the Transformer team
- Helped the team with Risk Analysis

Research Assistant, Boca Raton

September 2010 – December 2010

- Assisted Dr. Wang with his research relating to the Smart Grid
- Made mathematical models using MATHLAB

Professional Licenses, Awards, and Honors

Six Sigma Yellow Belt

May 2013

EIT Certified

October 2010

Graduated with Magna Cum Laude

Recipient of 2010 Outstanding Leadership Award from FAU College of Electrical Engineering

Vice President of Engineering Honor Society TAU BETA PI

January 2009 - December 2010

Name: Whitney Walker, Sr. Community Relations Specialist	
Company: Florida Power & Light	Email: (b) (6)
Address: (b) (6)	Phone: (b) (6)

Role in this project

Whitney will be responsible for guiding and executing the community benefits plan for the NextEra Southeast Hydrogen Hub. She is a senior communication relations specialist and oversees NextEra \$30MM social impact investment which has benefited 4,000 lives since its inception in 2021. Her leadership has impacted 11 new STEM workforce development programs, 10 new scholarships, 7 new permanent endowments and 53 strategic partnerships and aligns with national and local organizations advancing equity for marginalized communities.

Summary of Relevant Background

Whitney Cunningham Walker is an innovative social impact leader with over 15 years of experience in public affairs, social governance, and strategic branding. She is the president of the nationally award-winning African American Professional Employee Group (AAPEG), NextEra Energy's largest and oldest employee resource group. Whitney serves on the board of directors for Community Partners of South Florida and is the strategic planning committee chair. She is an executive board member and chair of the communications committee of the Housing Leadership Council of Palm Beach County. She is also a board member of the Palm Beach State College Foundation. Whitney is a member of the West Palm Beach chapter of The Links, Incorporated, the Junior League of the Palm Beaches' Community Advisory Council, and Leadership Palm Beach County's 2020 Focus Class. Whitney generously uses her gift of synthesizing and storytelling as a sought-after subject matter expert, speaker, and panelist on the propositional value of social sustainability.

Education / Training

Dartmouth College, Bachelor of Arts, Sociology, (b) (6)

Professional Experience

Whitney began her career in media, marketing, and social responsibility in Los Angeles and New York City. After developing platforms with Tyra Banks and Sean "Diddy" Combs, Whitney launched a mission-led brand management firm, Brandchild, catapulting author Wes Moore's "The Work" to the top of the New York Times bestseller list.

Whitney currently oversees the NextEra Energy Foundation's \$30 million social impact investment, which has directly benefited 4000 lives since its 2021 inception. Her leadership has impacted 11 new STEM workforce development programs, ten new scholarship programs, seven new permanent endowments, and 53 strategic partnerships and alignments with national and local organizations advancing equity for marginalized communities.

Professional Licenses, Awards, and Honors

Diversity, Equity and Inclusion in the Workplace Certificate

University of South Florida Corporate Training and Professional Education, Issued May 2021

Name: Arif I. Sarwat, Ph.D.	
University: Florida International University Address: (b) (6) [Redacted]	Email: (b) (6) Phone: (b) (6) [Redacted]

Role in this project

Utilizing 10 years of industry (Siemens) and 15 years of academia experience To conduct reliability analysis, including verification and validation of project objectives. To enable and implement **Diversity, Equity, Inclusion and Accessibility (DEIA)** program across the project. To collect data and develop reports for various agencies.

Summary of Relevant Background

1. **Lead contributor/developer for Energy Smart Florida** (\$800+ million funded DOE and industry program). This is the largest smart grid implementation in the United States.
2. **Implemented comprehensive multiple DEIA** (2 million dollars funded DOE and industry programs) programs at FIU where participants gets trained and exposure of the industry leading to jobs. Minority students get trained at FIU labs and get exposed to daily industry problems. In summer they have opportunity to do internships at National Labs (NREL, INL, SNL). Last year 10 such students participated and 6 of them received full-time job offers. Launched fully online program for **journeyman and electricians** that want to join the renewable energy workforce. **More than 30 certified in the first year alone.**
3. **Artificial Intelligence Renewable (AIR) Microgrid** (\$15 million industry funded): This is a 13.2 KV state-of-the-art hybrid power plant and AIR Microgrid (1.4 MW grid-tied PV array, 3MW-9MWh Storage, and 3.35 MVA grid forming (GFM) inverter) integrated with **Grid Energy Intelligence Exploration Research (GENIE)** lab that has Hardware-in-the-loop real-time simulators.
4. **Proactive ANalytics and Data-Oriented Research on Availability & Security (PANDORAS)** (\$5 million federal and industry funded). The PANDORAS is a virtual Command & Control Center with advanced EMS/ADMS system having data of 6+ Million customers and 20GW of power. The effort allows to work on 550 substations across Florida.
5. **Directly Coupled Photovoltaic (PV) Electrolyzer and Fuel-Cell Systems.** The reliability, security, and flexibility in terms of various energy management techniques was increased by new implementations. Optimize hydrogen production as a reliable power source, we have combined a photovoltaic (PV) array with an electrolyzer. Optimization aims to maximize hydrogen production, minimize excess power, and minimize energy transfer loss.

Education / Training

AMU, Aligarh, India	Electronics Engineering	B.S., (b) (6)
University of Florida, Gainesville, USA	Electrical & Computer Engineering	M.S., (b) (6)
University of South Florida, Tampa, USA	Electrical Engineering	Ph.D., (b) (6)

Professional Experience

Eminent Scholar Chaired Professor, Department of Electrical & Computer Engineering (ECE), CEC, Florida International University (FIU)	2020 to present
Technology Director, STAT-EI a Startup	2022 to present

Topic 2 Resume

Associate Professor, ECE, FIU	2016 to 2020
Assistant Professor, ECE, FIU	2012 to 2016
Director, Electric Power Reliability and Analysis Center, FIU	2015 to present
Director, Energy, Power & Sustainability (EPS) Laboratory, ECE, CoEC, FIU	2012 to present
Assistant Professor (research), Department of Electrical Engineering, The University at Buffalo, The State University of New York's (SUNY Buffalo)	2011 to 2012
Deputy Director and Director of Research & Planning, Power Center for Utility Explorations (PCUE), ECE, University of South Florida, Tampa, Florida	2007 to 2011
SumTotal Systems, Gainesville, Florida, Manager, Senior Manager	2005 to 2007
Research Assistant, University of Florida	2003 to 2005
Siemens, Industrial Automation & Power Controls, Trainee, Executive & Manager	1995 to 2003

Professional Licenses, Awards, and Honors

NSF CAREER award in 2016; CEC faculty mentorship awardee in 2022; FIU TOP Scholar Award in 2019; Faculty Award for Excellence in Research & Creative Activities in 2016; College of Engineering & Computing Worlds Ahead Performance in 2016; FIU TOP Scholar Award in 2015.

Publications (all publications available at www.eps.fiu.edu)

1. A. Khalilnejad, A. Sundararajan, **A.I. Sarwat**, "Optimal design of hybrid wind/photovoltaic electrolyzes for maximum hydrogen production using imperialist competitive algorithm", *Journal of Modern Power Systems and Clean Energy (MPCE)*, Vol. 6, No. 1, pp. 40-49, January 2018, DOI: 10.1007/s40565-017-0293-0.
2. A. Khalilnejad, A. Abbaspour, and **A.I. Sarwat**, "Multilevel Optimization Approach for Directly Coupled Photovoltaic-Electrolyzer System", *International Journal of Hydrogen Energy*, Vol. 41, No. 28, pp. 11884-11894, July 2016, DOI: 10.1016/j.ijhydene.2016.05.082.
3. D. Saleem, A. Sundararajan, A. Sanghvi, J. Rivera, **A. I. Sarwat** and B. Kroposki, "A Multidimensional Holistic Framework for the Security of Distributed Energy and Control Systems," *IEEE Systems Journal*, vol. 14, no. 1, pp. 17-27, March 2020.
4. M. Moghaddami and **A. I. Sarwat**, "Single-Phase Soft-Switched AC-AC Matrix Converter With Power Controller for Bidirectional Inductive Power Transfer Systems," *IEEE Transactions on Industry Applications*, vol. 54, no. 4, pp. 3760-3770, July-Aug. 2018.
5. A. Khalilnejad, A. Sundararajan, **A.I. Sarwat**, "Optimal Operation of Combined Photovoltaic Electrolyzer System", *MDPI Energies*, Vol. 9, No. 5, DOI: 10.3390/en9050332.
6. A. Khalilnejad, A. Sundararajan and **A.I. Sarwat**, "Performance evaluation of optimal photovoltaic-electrolyzer system with the purpose of maximum Hydrogen storage," 2016 IEEE/IAS 52nd Industrial and Commercial Power Systems Technical Conference (I&CPS), Detroit, MI, 2016, pp. 1-9.
7. A. Anzalchi, M. Moghaddami, A. Moghadas, M. Malek Pour and **A.I. Sarwat**, "Design and Analysis of a Higher Order Power Filter for Grid-Connected Renewable Energy Systems", *IEEE Transactions on Industry Applications*, Vol. 53, No. 5, pp. 4149-4161, September-October 2017.
8. A. Anzalchi, M. Moghaddami, A. Moghadas, **A.I. Sarwat**, and A. K. Rathore, "A New Topology of Higher Order Power Filter for Single-Phase Grid-tied Voltage Source Inverters," *IEEE Transactions on Industrial Electronics*, vol. 63, no. 12, pp. 7511-7522, December 2016.

Topic 2 Resume

Name: Mohd Tariq, Ph.D.	
University: Florida International University	Email: (b) (6)
Address: (b) (6)	Phone: (b) (6)

Role in this project

To conduct reliability analysis, including verification and validation of project objectives.

Summary of Relevant Background

6. **Hardware-In-the-Loop (HIL) Lab @ AMU:** This research laboratory is state-of-the-art facility created with the support from Typhoon HIL, Switzerland under an award scheme worth INR 15 million. Different power systems and clean energy technology components are integrated for dynamic studies under C-HIL and P-HIL.

Education / Training

AMU, Aligarh, India	Electrical Engineering	B.Tech., (b) (6)
IIT-Kharagpur, India	Machine Drives & Power Electronics	M.Tech., (b) (6)
Nanyang Technological University, Singapore	Electrical Engineering	Ph.D., (b) (6)

Professional Experience

Postdoctoral Associate, Department of Electrical & Computer Engineering (ECE), College of Engineering & Computing, Florida International University (FIU), USA	2022 to present
Assistant Professor, Department of Electrical Engineering, Aligarh Muslim University, Aligarh, India	2017 to present
Researcher, Rolls-Royce @ NTU Corporate Lab, Singapore	2014 to 2017
Faculty, National Institute of Technology- Bhopal India	2014
Scientist, National Institute of Ocean Technology, Ministry of Earth Sciences, Chennai-India	2012 to 2013

Professional Licenses, Awards, and Honors

1. Young Researcher award, Innovation Council, AMU in 2021.
2. Young Engineer award, Institution of Engineers (India) in 2020.
3. Young Scientist Scheme Award- DST-GoI in 2019
4. IET Premium Award- IET EST Journal- 2019
5. Chartered Engineer by IEI-India in 2018.
6. Best Research Paper Award- IEEE IAS and IES Malaysia Section Annual Symposium-2016
7. Nanyang Research Scholarship in 2014
8. MHRD-GATE scholarship in 2011.
9. Several other best research paper awards in various international conferences

Topic 2 Resume

Publications

9. **M. Tariq**, A. I. Maswood, A. C. Moreddy, C. J. Gajanayake, M. Y. Lee and A. K. Gupta, "Reliability, Dead-Time, and Feasibility Analysis of a Novel Modular Tankless ZCS Inverter for More Electric Aircraft," in IEEE Transactions on Transportation Electrification, vol. 3, no. 4, pp. 843-854, Dec. 2017.
10. **M. Tariq**, M. Meraj, A. Azeem, A. I. Maswood, A. Iqbal and B. Chokkalingam, "Evaluation of level-shifted and phase-shifted PWM schemes for seven level single-phase packed U cell inverter," in CPSS Transactions on Power Electronics and Applications, vol. 3, no. 3, pp. 232-242, Sept. 2018.
11. **M. Tariq**, A. I. Maswood, C. J. Gajanayake and A. K. Gupta, "Modeling and Integration of a Lithium-Ion Battery Energy Storage System With the More Electric Aircraft 270 V DC Power Distribution Architecture," in IEEE Access, vol. 6, pp. 41785-41802, 2018.
12. M. Ali, **M. Tariq**, K. A. Lodi, R. K. Chakraborty, M. J. Ryan, B. Alamri, C. Bharatiraja, "Robust ANN-Based Control of Modified PUC-5 Inverter for Solar PV Applications," in IEEE Transactions on Industry Applications, vol. 57, no. 4, pp. 3863-3876, July-Aug. 2021.
13. I. Pervez, I. Shams, S. Mekhilef, A. Sarwar, **M. Tariq** and B. Alamri, "Most Valuable Player Algorithm based Maximum Power Point Tracking for a Partially Shaded PV Generation System," in IEEE Transactions on Sustainable Energy, vol. 12, no. 4, pp. 1876-1890, Oct. 2021.
14. S. Ansari, A. Chandel and **M. Tariq**, "A Comprehensive Review on Power Converters Control and Control Strategies of AC/DC Microgrid," in IEEE Access, vol. 9, pp. 17998-18015, 2021.
15. S. Ansari, **M. Tariq**, A. Chandel, B. Khan, "Operation and control of a synch invulnerable master-slave organised islanded alternating current microgrid". IET Gener. Transm. Distrib. 00, 1– 17 (2022).
16. A. Vinayagam, V. Veerasamy, **M. Tariq**, A. Aziz, "Heterogeneous learning method of ensemble classifiers for identification and classification of power quality events and fault transients in wind power integrated microgrid", Sustainable Energy, Grids and Networks, Volume 31, 2022, 100752, ISSN 2352-4677.
17. H. Iqbal, **M. Tariq**, M. Sarfraz, M. A. Anees, W. Alhosaini, A. Sarwar, "Model predictive control of Packed U-Cell inverter for microgrid applications", Energy Reports, Volume 8, Supplement 10, 2022, Pages 813-830, ISSN 2352-4847.
18. M. S. U. Khan, A. I. Maswood, **M. Tariq**, H. D. Tafti and A. Tripathi, "Parallel Operation of Unity Power Factor Rectifier for PMSG Wind Turbine System," in IEEE Transactions on Industry Applications, vol. 55, no. 1, pp. 721-731, Jan.-Feb. 2019.