Abstract
The power infrastructure in the United States of America (USA) and around the world is aging. The American Society of Civil Engineers (ASCE) in its 2017 Infrastructure Report Card, where the rated energy infrastructure was given a D+, said most electric transmission and distribution lines were constructed in the 1950s and 1960s with a 50-year life expectancy. Lifetimes of the power lines have already been surpassed. The replacement value of large power plants is over $2.5 trillion and the new Presidency is proposing a $1 trillion investment in the field of aging US infrastructure to include the electric grid. The EIA has put the number of power plants in the United States at about 8,804 power plants. The share size and cost of utility power assets in addition to the reliability and safety demanded from them make the subject of managing the infrastructure impossible to ignore. An appropriate management program is needed for efficient allocation of plant improvement funds since it is not feasible to replace an entire power plant in one year. For FPL, the third largest electric utility in the US, about 50% of the residential dollar goes towards operational cost of power plants, poles and wires. The reliability, quality and design of utility systems and infrastructure affect grid robustness, which in turn affect how the grid responds to power events coming from industrial and other customers. A non-robust grid will adversely affect the quality of power going to manufacturing plants. Poor power quality can lead to millions of dollars in losses to industrial customers per event. The number of events per year is a factor of the grid, weather, actions of other plants in the same circuit, and more. Financial losses vary based on plants’ protection devices, grid design, controls logic, and engineers’ recovery plans. Noting that experts (baby boomers) in charge of said infrastructure are retiring rapidly, gaps are being left that will affect the future of the grid. All the stated potential losses per year highlight the importance of efficiently managing utility, industrial and human infrastructure to keep losses to stakeholders as low as possible. This talk by Urenna Onyewuchi, Ph.D. will provide actions, methodologies and guidance addressing successful management of non-human and human infrastructure.

Biography
Onyewuchi studied electrical engineering at George Mason University in Virginia and graduated with a doctorate degree in the field of asset management from Georgia Institute of Technology’s (GATech’s) electrical and computer engineering program. Her work in asset management entailed developing algorithms for the maintenance and reliability of power equipment, infrastructural and other systems. Onyewuchi was a power engineer at Corning Incorporated, the world leader in specialty glass, ceramics and optical physics. She specialized in applying power quality data analysis/data science towards building resiliency into plant manufacturing and environmental processes; simulating and modeling electrical manufacturing processes for testing, optimization and process improvements; and power failure investigations, among other things.