

***Building Efficient, Sustainable
and
Resilient Grid by Controlling the Edge***

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Abstract: The evolution of the electricity grid faces significant challenges if it is to integrate and accept more energy from renewable generation and other Distributed Energy Resources (DERs). To maintain grid's reliability and turn intermittent power sources into major contributors to the U.S. energy mix, we have to think about the grid differently and design it to be smarter and more flexible. ARPA-E is interested in disruptive technologies that enable increased integration of DERs by real-time adaptation while maintaining grid reliability and reducing cost for customers with smart technologies. This talk will identify opportunities in developing next generation control technologies and grid operation paradigms that address these challenges and enable efficient, sustainable and reliable transmission and distribution of electrical power. Summary of ARPA-E NODES (Network Optimized Distributed Energy Systems) Program funding development of these technologies will be presented. Innovative approaches to coordinated management of bulk generation, DERs, flexible loads, and storage assets with multiple roles, and revenue streams will be discussed.



Biography: Dr. Sonja Glavaski is a Program Director at the Advanced Research Projects Agency-Energy (ARPA-E) overseeing diverse project portfolio developing innovative and disruptive technologies that would facilitate cost-effective building energy audits, more efficient power generation, electrification of transportation, and enable electricity grid to be more flexible and resilient. Her technical focus area is data analytics, and distributed control of complex, cyber-physical systems with emphasis on operations and security of energy systems. Dr. Sonja Glavaski worked on establishment of several grid modernization and transportation focused ARPA-E programs. She spearheaded development and is currently helming ARPA-E NODES Program that aims to develop transformational grid management and control methods to create a virtual energy storage system based on use of flexible loads and distributed energy resources (DERs). Prior to joining ARPA-E, Dr. Glavaski served as a Control Systems Group Leader at United Technologies Research Center (UTRC), where she led a team of multi-disciplinary scientists working on developing game changing technologies for energy efficient building HVAC/R systems, wind turbines, fuel cells and flow batteries. It was at UTRC that she recognized the need to develop more systematic ways to integrate and operate all of these technologies with the electricity grid. Before being at UTRC, Dr. Glavaski led key programs at Eaton Innovation Center and Honeywell Labs. During her 20-plus-year career, Dr. Glavaski has contributed significantly to technical advancements in numerous product areas, including energy systems, vehicles and aircraft systems. Dr. Glavaski received PhD and MS in Electrical Engineering from California Institute of Technology, and Dipl. Ing and MS in Electrical Engineering from the University of Belgrade.