



## **IEEE Miami Section Invited Seminar Announcement**

### ***“Proliferation of Fuel Cell Electric Vehicles in Coordinated Operations of Hydrogen-Integrated Urban Transportation and Renewable Energy-based Power Distribution Networks”***

**Speaker:** Professor Mohammad Shahidepour, NAE, IEEE Fellow

**Date:** Monday, October 24, 2022

**Lecture:** 11:00 am - 12:30pm, EC 2840, Florida International University (FIU), EC Campus, 10555 W Flagler St Miami, Florida 33174

**Zoom:** <https://fiu.zoom.us/j/99542772067?pwd=UjZjYWJlTGRhMVdNWnJkRC9lNTExQT09>



#### **Abstract:**

Hydrogen has been advocated as a promising energy carrier to achieve low-carbon integration of urban transportation network (UTN) and renewable energy-based power distribution network (PDN). In this presentation, we discuss the hydrogen refueling service fee (HRSF) as a scheduling strategy to guide hydrogen fuel cell electric vehicles (HFCEVs) in selecting the hydrogen refueling stations. Correspondingly, the HRSF-based coordinated operation model is established to minimize the costs of UTN travel, PDN operation, and carbon emission, while the nodal carbon restriction, uncertainties of renewable distributed generators, and origin-destination traffic demand and constraints are considered. The proposed model is solved by the decentralized alternative direction method of multipliers algorithm and verified on the hydrogen integrated UTN and PDN in Sioux Falls. Numerical results demonstrate that popularizing HFCEVs contributes to emission reduction, and the HRSF-based coordinated operation strategy is effective in reducing the overall emissions, promoting renewable energy accommodation, and improving the holistic operation efficiency of the hydrogen-integrated UTN and PDN.

#### **Speaker's Bio**

Dr. Mohammad Shahidepour is a University Distinguished Professor, Bodine Chair Professor of Electrical and Computer Engineering, and Director of the Robert W. Galvin Center for Electricity Innovation at Illinois Institute of Technology (IIT). He has over 40 years of experience with power system operation, planning, and control and has completed several major projects for the electric energy sector. His project on Perfect Power Systems has converted the entire IIT Campus to an islandable microgrid. Dr. Shahidepour was the recipient of several technical awards including of the IEEE Burke Hayes Award for his research on hydrokinetics, IEEE/PES Outstanding Power Engineering Educator Award, IEEE/PES Ramakumar Family Renewable Energy Excellence Award, IEEE/PES Douglas M. Staszkesy Distribution Automation Award, and the Edison Electric Institute's Power Engineering Educator Award. He has co-authored 6 books and over 800 technical papers on electric power system operation and planning and served as the founding Editor-in-Chief of the IEEE Transactions on Smart Grid. Dr. Shahidepour is the recipient of the 2009 honorary doctorate from the Polytechnic University of Bucharest. He is a Fellow of IEEE, Fellow of the American Association for the Advancement of Science (AAAS), Fellow of the National Academy of Inventors (NAI), and an elected member of the US National Academy of Engineering (NAE). He is also listed as a highly cited researcher on the Web of Science (ranked in the top 1% by citations demonstrating significant influence among his peers).

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