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Special Session on Wholesale and Local Electricity Market Design Based on the Transition Toward Renewable-Dominant Grids

The market share of renewable energy is growing as a result of global efforts to develop a low-carbon energy system. However, power system/market operators encounter significant challenges as a result of the growing penetration of renewable energy sources. To consider the uncertainty associated with renewable energy, significant operational flexibility is necessary. To reward flexibility providers, the power market structure must be modified and redesigned. On the other hand, as renewable energy sources become more prevalent, market prices become more volatile, necessitating an analysis of the pricing and clearance mechanisms. This Special Issue will cover issues pertaining to strategies and tools that make it easier to incorporate renewable energy sources into electricity markets.

Topics of interest include, but are not limited to:

- Communication methods applied in smart grid
- Local market architecture, cost-benefit analysis, and energy policies for the adoption of DER
- Emerging local market design and trading mechanism in regional and community level
- Market clearing and pricing in electricity markets with high renewable penetrations
- Design of ancillary service market to accommodate intermittent renewable energy production
- Operational flexibility provided by renewable sources and storage technologies
- Market clearing and pricing in electricity markets with high renewable penetrations
- Smart contracts for peer-to-peer energy markets and transactive energy trading
- The role of Decentralized electric vehicle management and scheduling models in local markets
- Investigate sustainability in retail marketing management and consumer behavior

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Hossein Shahinzadeh (Member, IEEE) was born in Isfahan, Iran, in 1987. He graduated from the Iranian Center of Excellence in Power Systems, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, with a scientific education in electrical engineering. Since September 2015, he has been an Academic Member of the Islamic Azad University of Najafabad's (IAUN) Department of Power Engineering, Faculty of Electrical Engineering. In Tehran, he works as an Associate Researcher at the Iran Grid Secure Operation Research Institute, AUT, and the Niroo Research Institute (NRI). He is also a Senior Scientist at SMRC, IAUN, Isfahan, where he works in the subject of smart city research. The Internet of Things (IoT), artificial intelligence, metaheuristic optimization methods, big data analytics, blockchain, V2G integration, 5G technology in smart grids, renewable energy deployment, energy storage facilities, power markets, microgrids, and long-term energy planning are some of his research interests in smart grids.



Jalal Moradi (Member, IEEE) was born in Isfahan, Iran, in 1988. He graduated with a scientific education in power systems engineering. He works as an associate researcher at the Iran Grid Secure Operation Research Institute, Amirkabir University of Technology, Teheran, Iran. He also has scientific cooperation with Smart Microgrid Research Center, IAUN, Isfahan, Iran. His area of expertise includes electricity markets, smart grids, transactive energy trading, artificial intelligence and data science, optimization, uncertainty modeling, IoT, Big data analytics, Blockchain, renewable energy, and energy storage technologies.



Wahiba Yaïci (Member, IEEE) is a Research Scientist at the CanmetENERGY Research Centre in Ottawa, Canada, where she is leading R&D projects in renewables and integrated energy systems. She leads and develops hybrid renewable power and energy technologies for building applications and for the electric vehicles. The focus of her research is on the experimental, modelling, simulation and optimisation using advanced simulation tools, CFD, Artificial Intelligence methods for the optimal design, performance and emissions predictions of micro-combined cooling, heat and power systems, solar/heat-driven tri-generation, hybrid heat pumps, energy storage systems, NG/RNG/H2 vehicles and infrastructures, and hybrid energy storage systems for electric vehicles. Previously, Dr. Yaïci worked also as Associate Professor, Technical Expert, Scientific Authority and Project Manager on a number of R&D and large industrial projects at Natural Gas Technologies Centre (Energir-Engie), KSH (RWE), BPR-Bechtel, and Rolls-Royce, in Montreal, Canada, where she has been a key contributor to many industrial and R&D projects. She is author and co-author of several refereed journal and conference papers and book chapters. She has also written more than 100 confidential reports for industrial projects. She is reviewer for many international scientific journals, is a member of IEEE, IEEE PES, ASME, ASHRAE, ISES, Canadian Artificial Intelligence Association, and is a Registered Professional Engineer in the province of Ontario, Canada (PEO).



Mohamed Benbouzid (Fellow, IEEE) received the Ph.D. degree in electrical and computer engineering from the National Polytechnic Institute of Grenoble, Grenoble, France, in 1994, and the Habilitation à Diriger des Recherches degree from the University of Amiens, Amiens, France, in 2000. After receiving the Ph.D. degree, he joined the University of Amiens, Amiens, France where he was an Associate Professor of electrical and computer engineering. Since September 2004, he has been with the University of Brest, Brest, France, where he is a Full Professor of electrical engineering. Prof. Benbouzid is also a Distinguished Professor and a 1000 Talent Expert at the Shanghai Maritime University, Shanghai, China. His main research interests and experience include analysis, design, and control of electric machines, variable-speed drives for traction, propulsion, and renewable energy applications, and fault diagnosis of electric machines. Prof. Benbouzid is an IEEE Fellow and a Fellow of the IET. He is the Editor-in-Chief of the International Journal on Energy Conversion and the Applied Sciences (MDPI) Section on Electrical, Electronics and Communications Engineering. He is a Subject Editor for the IET Renewable Power Generation.



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Deadlines of the special session:

Full paper submission (maximum 6 pages):	March 26, 2023
Notification of acceptance:	April 30, 2023
Final submissions due:	May 14, 2023

All the instructions for paper submission are included at the conference website.

<https://gpecom.org/2023/guidelines/>