



# 2024 PSERC Summer Tutorial

## A Bidding Strategy Algorithm for Distributed Energy Resource (DERs) Aggregators: Participation in Day-ahead and Real-time Energy and Ancillary Markets

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Federal Energy Regulatory Commission (FERC) Order No. 2222 paved the way for DERs to participate in the wholesale market via aggregations to meet regulatory requirements. However, it is necessary to develop bidding strategies unique to DER aggregators due to the uncertainty and low operational cost. Multiple work in literature investigate the bidding strategy of DER Aggregators, considering the risk of failing obligations which pose financial risks to the aggregator.

This work proposes a bidding strategy for a DER aggregator whose resource mix comprises Photovoltaic (PV) units and Energy Storage Resources (ESRs) participating in the day ahead and real-time energy and ancillary service market. This work covers the day-ahead model with a vision of real-time as well as a separate real-time bid generation module. Regulation-up is considered concerning the participation of DERs in provision of ancillary services. The framework uses a scenario-based modeling approach for market price and PV output power uncertainty. The model produces price-quantity offer curves for the day-ahead and real-time energy and ancillary service market.

**JULY 10, 2024**

[REGISTRATION](#)

**12:00 – 1:00 P.M. CT**

(10:00 - 11:00 P.M. PDT)

Mojdeh Khorsand Hedman is an Associate Professor in the School of Electrical, Computer, and Energy Engineering at Arizona State University. She received her PhD, MSc, and BSc degrees in power and energy system engineering from Arizona State University, Iran University of Science and Technology, and University of Mazandaran respectively. She is a recipient of 2024 NSF CAREER award. Her research is supported by NSF, DOE, ARPA-E, SRP, and PSERC. Her research expertise includes power systems operations and planning, renewable energy integration, application of artificial intelligence for energy systems, energy and society, smart cities, transient stability studies, protection systems, power flow control technologies, stochastic optimization, and electric energy markets. She has published several journal and conference papers in these areas.

