A Novel Stochastic Approach For Optimal Scheduling of Networked Microgrids Based on Blockchain-Enabled IoT

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***Abstract*—**Breakdown the conventional large power grids into networked microgrids (MGs) can potentially enhance the reliability, resiliency, sustainability, and security of the electricity grids. However, the energy/power management along with the security and privacy of the entire grid would be more challenging. This paper proposes a novel stochastic structure for the energy/power scheduling of networked MGs based on the Internet of Things (IoT) approach. IoT is restructuring various industrial divisions comprises many smart sensors distributed throughout the entire grid to collect massive data to have an efficient power dispatch within the network. To improve the network security and privacy, and also reduce the system risks, mitigate financial fraud, and cut down operational cost, the blockchain technology is integrated with the IoT approach. Due to the stochastic nature of the proposed problem, the unscented transform (UT) technique, is employed to model the uncertainty of the problem such as hourly load demand, and renewable energy output power. Eventually, the proposed optimization problem is formulated as mixed-integer linear programming (MILP) problem and examined on multiple networked MGs in three different areas to validate the efficiency and merit of the proposed method.