

## I. CASE STUDY DEMONSTRATION

Cite the CASIO energy prices here

### A. Simulation Data: IEEE 123 Bus Test System

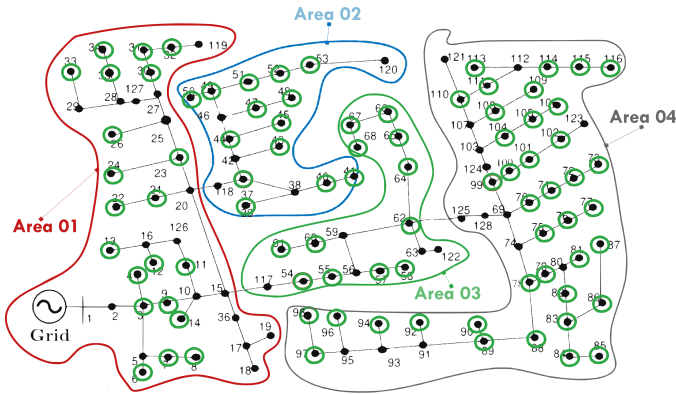


Fig. 1: IEEE 123 Node System Divided Into Four Areas

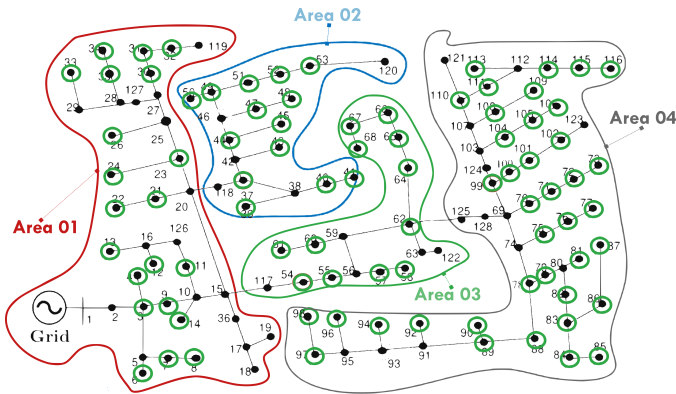


Fig. 2: Input load and energy price data

### B. Simulation Results

Case 1: centralized OPF with battery Case 2: ENApp based distributed OPF with battery