

Feb 1st, 2022

Bronzeville Community Microgrid

ComEd Smart Grid Emerging Technology | Honghao Zheng

ComEd, An Exelon Company



Our Company:

- One of six utilities owned by Exelon
- 6,400 Employees
- Service Territory: 11,428 square miles



Our Customers:

- 4 million+ customers in northern Illinois,
- including the City of Chicago

Our Grid:

- Peak Load: 23,753 MW (7/20/2011)
- 553,800 distribution transformers
- 66,200 circuit miles of primary distribution
- 52% overhead, 48% underground
- 5,800 circuit miles of transmission
- 93% overhead, 7% underground



Demand for a Resilient and Flexible Grid



Catastrophes that threaten the resiliency of the electric grid **Source:** NOAA

- Electric utilities typically focus on reliability, or assuring that there is adequate supply under credible contingencies
- In recent years, there is more emphasis on the resilience as well as the flexibility of the electric grid
 - Greater numbers and impact of major weather events
 - o Increased salience of physical and cyber-terrorism against energy infrastructure
- Resilience: The ability to prepare for, withstand, recover from and reduce the magnitude and/or duration of disruptive events
- Flexibility: The capability of a power system to maintain balance between generation and load during uncertainty, resulting in increased grid efficiency, resiliency and the integration of variable renewables into the grid.

Bronzeville Community Microgrid

- The Bronzeville Community Microgrid enables a green, resilient, sustainable neighborhood for consumers
- 7 MW aggregate load, serving approximately 1,000 residences, businesses and public institutions
- Installation of first utility-operated microgrid cluster powered by DERs including 750 kW solar PV, 500kW/2000kWh battery energy storage, and 4.8 MW controllable gas generation
- Supported by multiple DOE grants (MMC, SHINES, SIMPLE, XFC, MUD)



Development and Control-Hardware-In-the-Loop (CHIL) Testing of Microgrid Master Controller (MMC)

Commercialized MMC solution went live December 12th 2022



Demonstration Pilots Hosted in Bronzeville CoF











DERs (e.g. BESS, Solar, Wind, EV,









Data-Driven Advanced Applications



Model-based Analytical Applications (MMC, DLSE, etc.)





Clean Energy Enablement & Grid Edge Intelligence







Peer ACC ACC

Community Control

Innovation with DOE Grants



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Thank you

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