

A night-time photograph of the Chicago skyline, featuring numerous illuminated skyscrapers and buildings reflected in the water in the foreground. The sky is a deep blue, and the city lights create a vibrant, colorful scene.

# ComEd Overview

**Daniel P. Gabel, PE**

Senior Manager, DER Interconnection

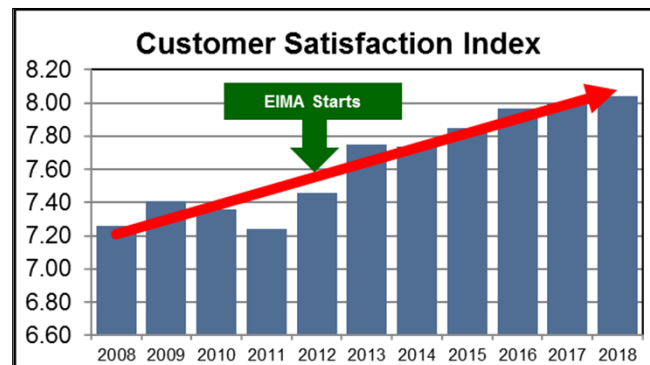
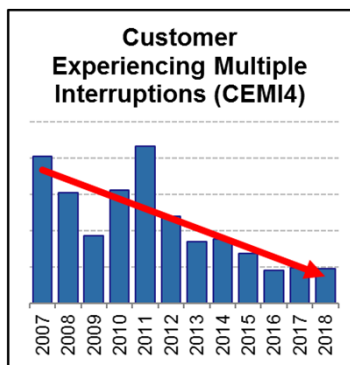
## COMED, AN EXELON COMPANY

- 4 million electric customers in northern Illinois, including the City of Chicago
- ~6,400 Employees
- Service Territory: 11,429 square miles
- Peak Load: 23,753 MW (7/20/2011)
- 541,200 distribution transformers
- 113,100 circuit miles
  - 40,900 of low voltage
  - 66,400 of primary distribution
  - 5,800 circuit miles of transmission
- 801 substations
- **Connected renewable generation:**
  - 3,956 MW of wind (primarily transmission)
  - 48 MW of solar (primarily distribution)



# INFRASTRUCTURE INVESTMENTS PROVIDING REAL BENEFITS

- Record Reliability
  - More than 60 percent improvement in overall reliability since 2012 (SAIDI)
  - Avoided more than 11M customer interruptions, resulting in \$2.1B in societal savings
- Premier Customer Experience
  - 2018 Customer Satisfaction Index (CSI) achieved an all-time high enabled by strong reliability satisfaction, improved customer communications, and tools
  - System-wide smart meter deployment (4.2M meters) proving beneficial through the data they provide and additional programs they enable
    - 99.78% system read rate (best on record)
    - 98% reduction in estimated bills
    - Peak Time Savings (PTS) has delivered participating customers more than \$5.6M in bill credits since 2015



# ENABLING THE FUTURE: THE FUTURE ENERGY JOBS ACT "FEJA"

## Energy Efficiency

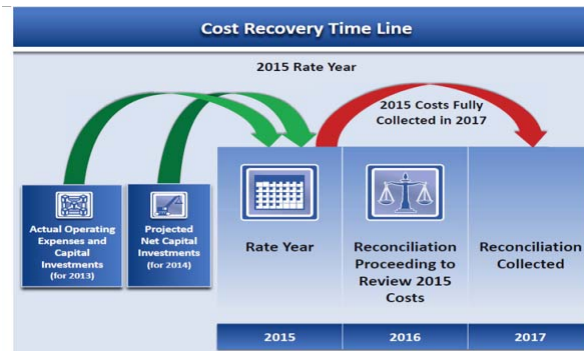
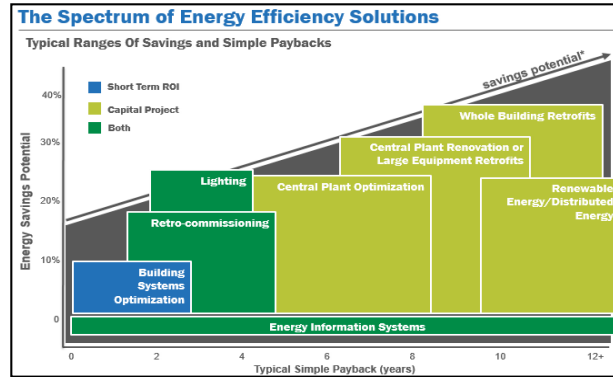
Allows ComEd to **recover costs** based on average EE measure lives

## Solar

Includes **significant incentives for renewable generation**, particularly distribution-connected solar

## Formula Rate Extension

Extends formula ratemaking through 2022



## Decoupling

Protects utilities from declining load



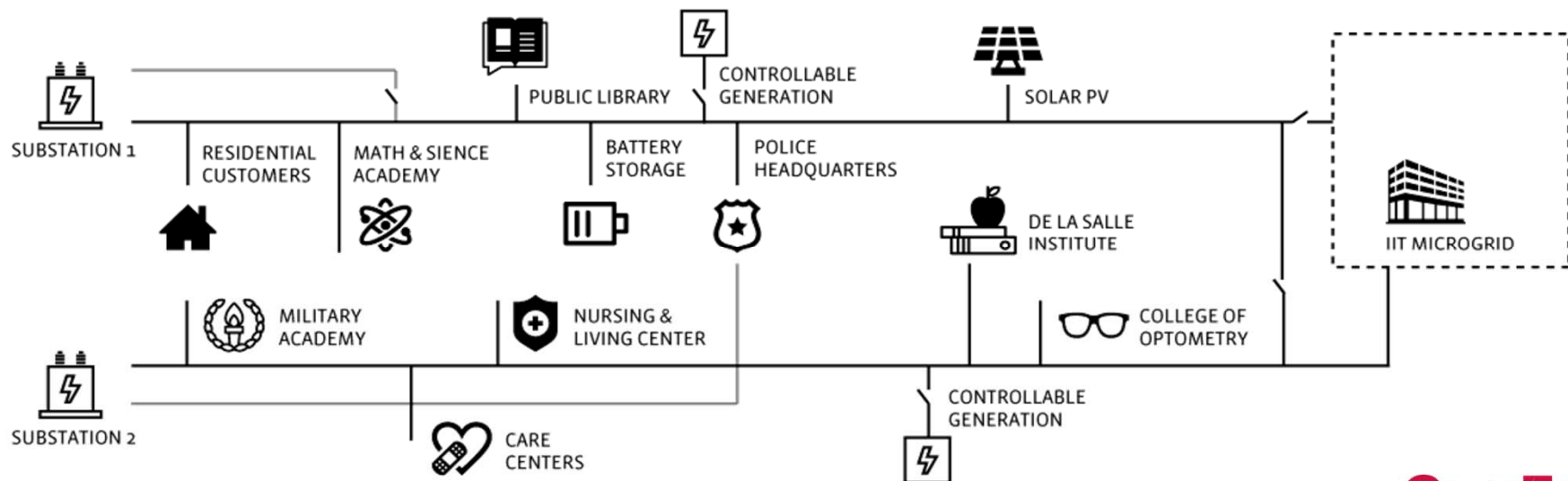
## Low-Income Programs

Continued CARE programs and new job training programs provide for **continuing community engagement**

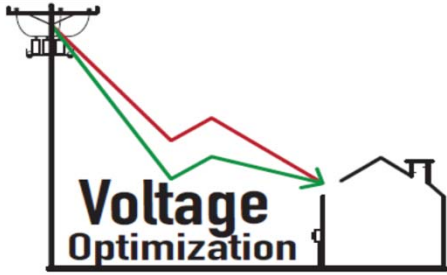


# BRONZEVILLE COMMUNITY MICROGRID

- Illinois Commerce Commission (ICC) approved ComEd's microgrid project in Feb. 2018.
- The Bronzeville Community Microgrid is being built in two phases:
- **Phase I** (completed) – 2.5 MW load, PV (3<sup>rd</sup> party owned) and Battery Energy Storage System, mobile generators for testing
  - Feeder work is complete, BESS has been installed, PV on all 17 buildings has been installed with a total of 583 kW. Microgrid Master Controller tested in the lab.
- **Phase II** – 7.5 MW total load, Controllable generation (3<sup>rd</sup> party owned)
  - RFP for controllable generation under way. Microgrid master controller deployment in progress. Clustering with existing microgrid at Illinois Institute of Technology will be demonstrated
- Two U.S. Department of Energy grants awarded to ComEd to develop, test and further advance microgrid controller as well as integrate PV and Battery Energy Storage System



# VOLTAGE OPTIMIZATION

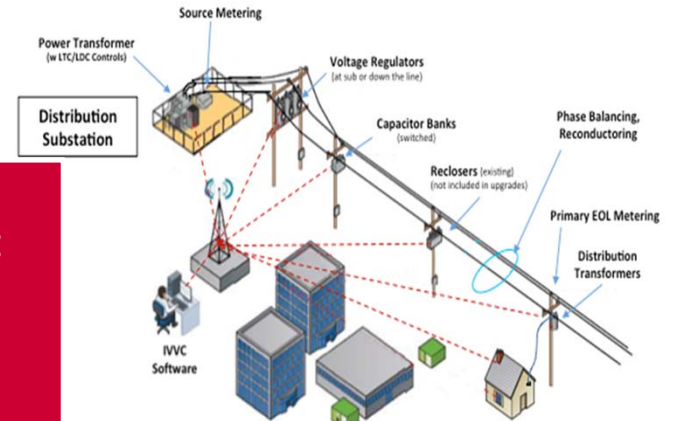


- ❖ Large Capital Investment over eight years from 2018 through 2025.
- ❖ VO is being deployed on more than 3,000 feeders system wide which are sourced by 470 substations.

## Part of Energy Efficiency Portfolio:

The ComEd VO system is based on Spectra VVC™, part of OSI's (Open Systems International) Distribution Management System suite of products.

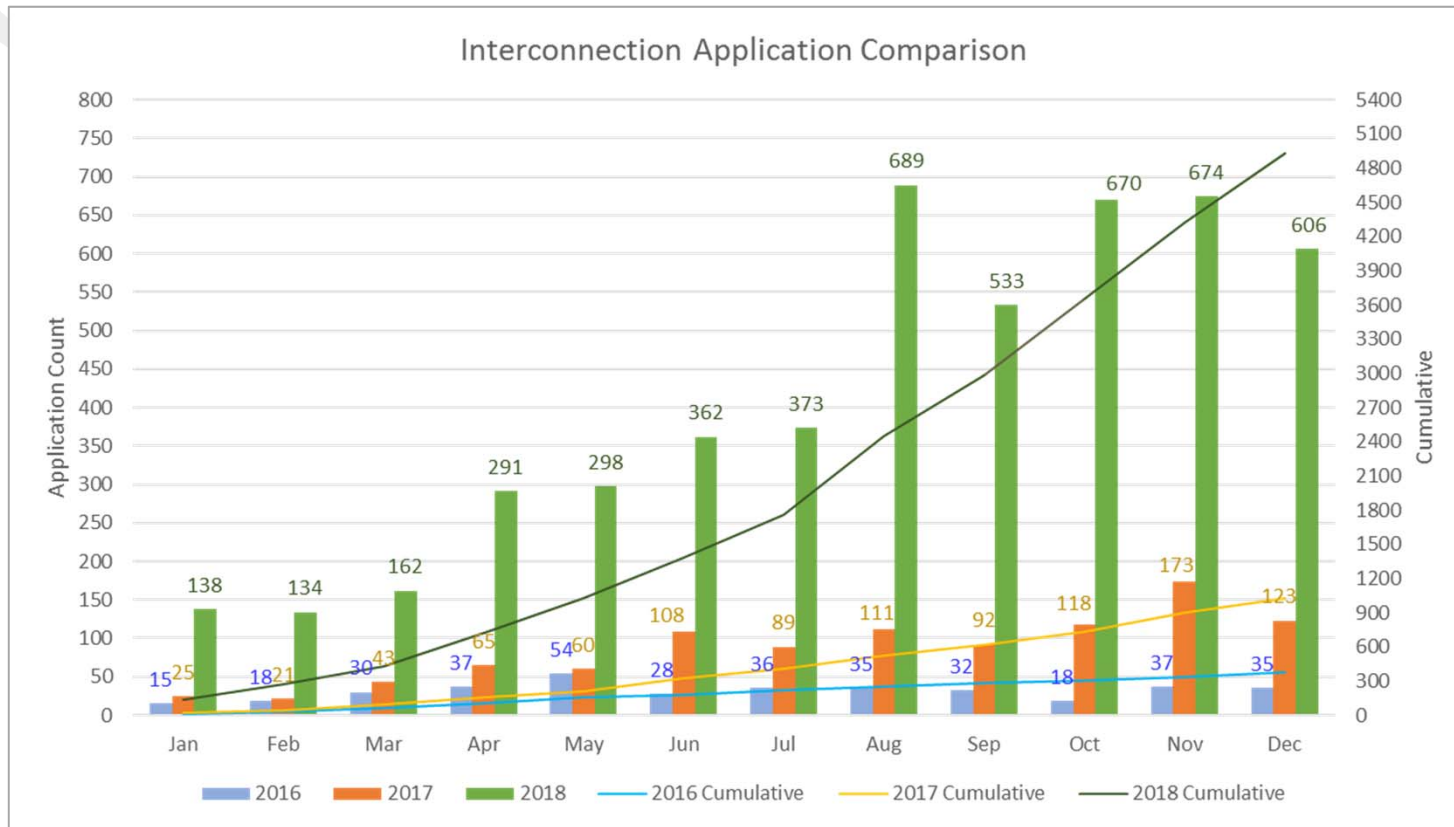
Integration of this advanced technology enables us to realize cost-effective energy savings and ensuring sufficient operational voltage on the ComEd distribution network.



- ❖ In 2018, ComEd had 40 stations enabled in the VO platform for an estimated 100,000 MWh of energy savings. This includes 174 feeders, 800 VO capacitor banks, 40 VO regulators, and more than 200 smart meters.

- ❖ Through January 2019:
- ❖ Substation enhancements along with feeder conditioning completed on 42 substations
  - ❖ Work entailed installing smart controllers on LTCs, capacitor banks and voltage regulators.
  - ❖ Provides an estimated annual energy savings of over 110,000MWh.
  - ❖ Leveraging existing AMI voltage from selected locations, thus providing feedback to the VO control application.

# UNPRECEDENTED SOLAR ACTIVITY DRIVEN BY FEJA INCENTIVES



## 2018

- Processed 4,928 applications – heavy interest in community solar and residential solar
- 5x more than 2017 and 14x more than 2016
- 1,087 DER facilities connected totaling 15.55 MW (90% residential)

## 2019 to date

- Upward trend continues
- Already more than 3x the applications received for the same period in 2018



## FEJA INTRODUCES COMMUNITY SOLAR TO ILLINOIS

- In 2019, the Illinois Power Agency (IPA) will procure solar RECs from Community Solar projects in the state equating to at least 166 MW of capacity through its Adjustable Block Program (ABP)
  - 117 MW in ComEd's service territory
- To participate in the ABP, projects need to have received an interconnection agreement from the utility
- Solar developer interest in the ABP has been robust
  - Over 1,100 MW of Community Solar capacity applied to ComEd's interconnection queue
  - 864 MW applied for the ABP
- As a result, the IPA will hold a lottery for Community Solar projects





## INTEGRATED PLANNING AND MODELING

- High penetration of DER poses challenges to traditional planning methods
  - Two-way power flow
- As renewable DER penetration increases, accurate system modeling becomes more significant
  - Improved DER forecasting
  - 8760-hour planning
  - Scenario analysis
  - Grid value of DER
- Future-state planning and modeling need to consider smart grid / smart city investments and emerging DER
  - Distribution Automation, Voltage Optimization
  - Storage, electric vehicles, microgrids
- Future-state planning and modeling need to consider resiliency
  - Siting of microgrids to provide optimal benefits
  - Enhanced monitoring and control, including low-latency, high-speed communications infrastructure (e.g., PMU, synchrophasor data, fiber)
  - Equitable economic development

**ComEd**<sup>®</sup>

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**powering lives**