

ComEd Grid Modernization



Dan Gabel

Manager, Smart Grid and Technology

September 30, 2013

THE STORM OF THE CENTURY IS BECOMING THE NORM

Summer of 2011

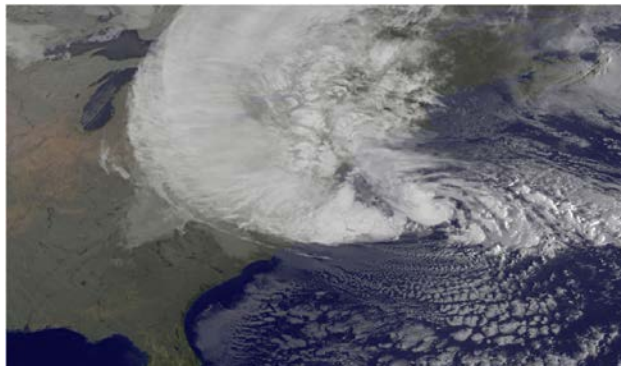
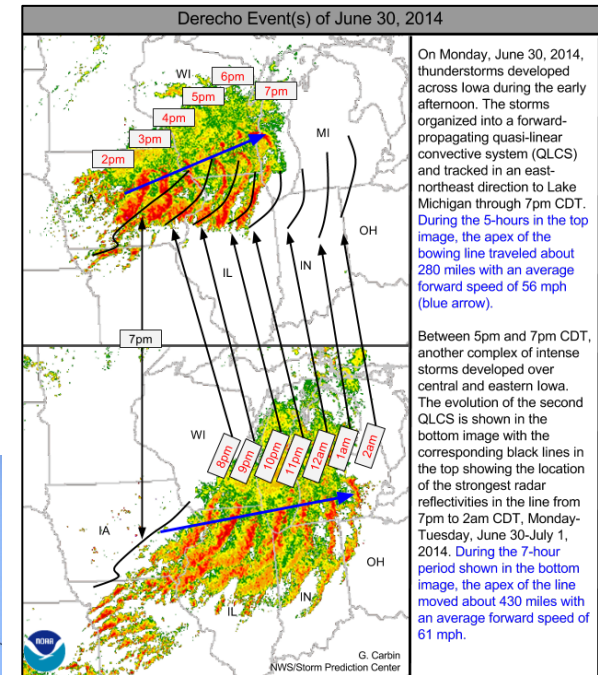
- ✓ Most damaging storm season on record for ComEd
- ✓ Eleven storms between June and August impacting 2.4M customers

October, 2012

- ✓ Hurricane Sandy pounds the Northeast
- ✓ Millions left without power – some for weeks

June 30, 2014:

- ✓ Rare “Double Derecho” hits northern Illinois
- ✓ Seven tornadoes reported within ComEd service territory
- ✓ Approximately 79,000 lightning strokes
- ✓ Approximately 430,000 customer outages



ENERGY INFRASTRUCTURE MODERNIZATION ACT (EIMA)

- Authorizes a 10-year, \$2.6 billion ComEd investment in upgrading and modernizing Illinois' electric grid.
- Performance-based formula rate brings greater stability to the regulatory process for significant investments in grid modernization.
- Provides consumer benefits through grid modernization and installation of smart meters.
- Protects consumers throughout the 10-year investment period through performance metrics, strong oversight and an intervener process involving advocates for consumers and business.
 - Commitments to Improved reliability and customer benefits

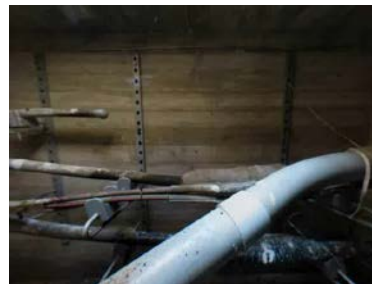


HALF OF THE \$2.6B INVESTMENT IS FOR INFRASTRUCTURE IMPROVEMENTS & TRAINING FACILITIES

	Program Goal
Underground Residential Cable (URD)	Refurbish or replace OVER 4,100 miles
Mainline Underground Cable	Assess, refurbish or rebuild OVER 32,000 manholes Test or replace OVER 3,600 miles of mainline cable
Wood Poles	Inspect OVER 730,000 poles Replace or reinforce OVER 19,000 poles
Storm Hardening	\$200M in improvements
Training Facilities	Construct two state-of-the-art training facilities



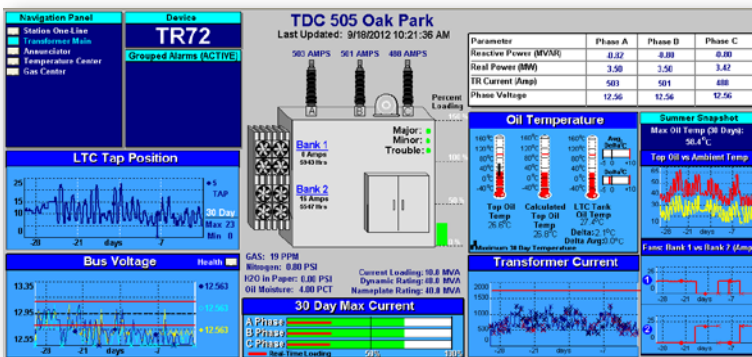
Before



After

HALF OF THE \$2.6B INVESTMENT IS FOR SMART GRID TECHNOLOGY

	Program Goal
Distribution Automation (DA)	Install 2,600 DA devices
Substation Upgrades	Upgrade 10 substations
Smart Meters	Install 4 million smart meters



EIMA RESULTS TO DATE



- Over 1.3 million customers are benefitting from work already completed
- Three substations completed, benefitting 54,500 customers, including O'Hare and Midway airports

- 421,000 avoided customer interruptions as a result of distribution automation devices installed through EIMA
- 2,450 avoided underground cable faults averting over 421,000 customer interruptions
- Storm hardening programs have avoided 927,000 customer interruption hours
- Over 1,100,000 automated meter readings for monthly billing



2012-2014 STORM PROCESS IMPROVEMENTS

Over 200 total storm process enhancements, examples include:

Joint Operations Center (JOC) / Joint Information Center (JIC)

- ✓ Partner with local governments to identify critical facilities
- ✓ Scalable Municipal Response (SMR) allows flexible response to municipal needs
- ✓ Identified over 3,700 Life/Health/Safety accounts in 400 Municipalities

Dispatching

- ✓ Utilized additional new dispatching resources to support contractor and mutual assistance crews
- ✓ Established a crew to dispatcher ratio of 9:1

Damage Assessment

- ✓ Patrolling resource pool expanded and equipped with mobile dispatch terminals
- ✓ Online damage assessment form for patrollers

Supply / Staging Centers

- ✓ Leveraging additional resources for material delivery
- ✓ ComEd Mobile Operations Center for Incident Command and on-boarding

Outage Communication

- ✓ Improved Outage Map
- ✓ Created consistent messaging in all E-Channels

Electronic Work Packages

- ✓ Ability to email contract / MA crews with tickets, maps and damage assessment information
- ✓ Significant productivity boost



JOC Activation



Mobile Command Vehicle



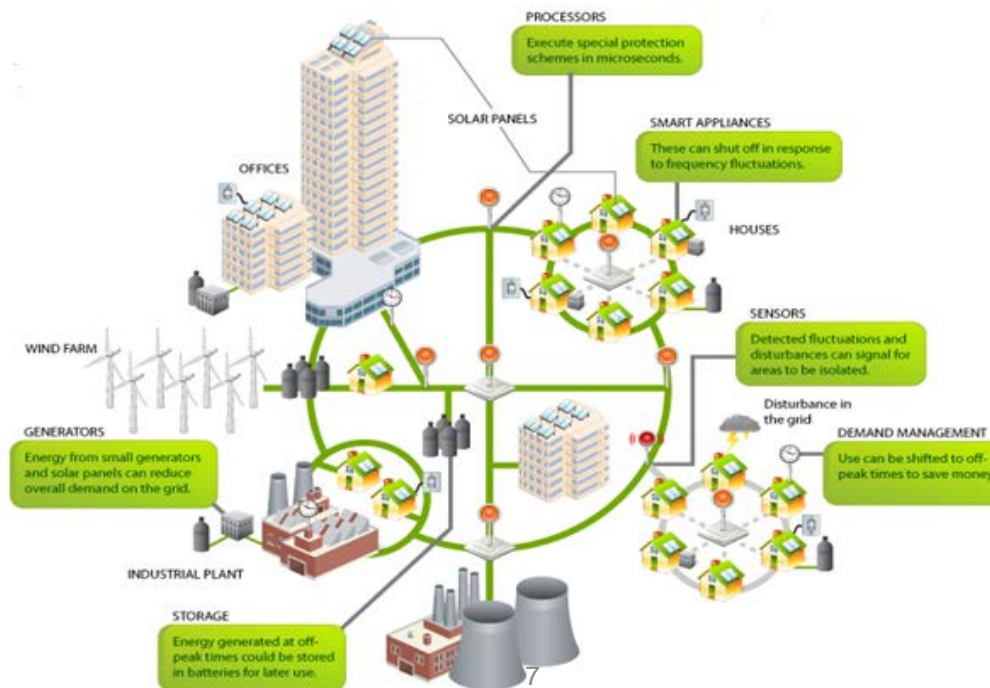
Training Mutual Assistance at a Staging Center



ComEd Outage Map

MICROGRIDS

- U.S. Department of Energy announced \$8 million to improve grid resiliency
- DOE awarded approximately \$1.2 million to ComEd and its partners to develop and test a commercial-grade microgrid controller capable of managing two or more interconnected microgrids
- ComEd's concept includes a diverse mix of facilities and critical loads, including police and fire department headquarters, major transportation infrastructure, healthcare facilities, and private residences



BRONZEVILLE RESILIENT COMMUNITY MODEL MICROGRID

ComEd is evaluating Chicago's Bronzeville neighborhood, adjacent to IIT, to demonstrate the clustered microgrid controller

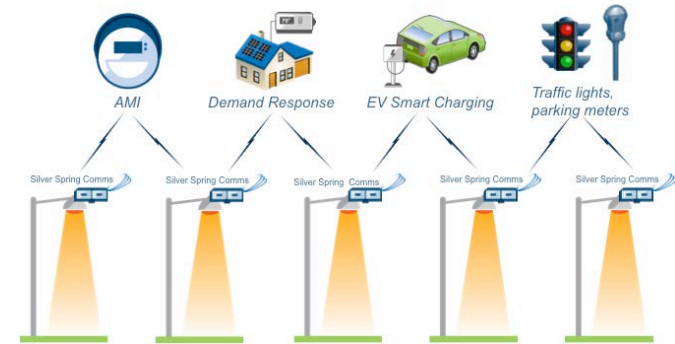


SUPERCONDUCTOR: CHICAGO CBD GRID RESILIENCY

- ComEd and American Superconductor (AMSC) recently agreed to partner with the Department of Homeland Security (DHS) in its Resilient Electric Grid Program
- Developing plans to deploy high temperature superconductor cable in Chicago's central business district (CBD).
- The project will connect five substations in Chicago's CBD, greatly enhancing grid resiliency
- At more than 3 miles in length, this represents the most extensive superconductor project of this nature in the world



SMART CITIES: SMART LED STREETLIGHTS



- ComEd is evaluating opportunities to offer smart LED streetlight service to the communities we serve
- ComEd’s wireless communications network is the backbone of the system
 - Two-way communications for monitoring and control of meters, streetlights and future devices
- Streetlight control nodes installed on each light fixture include the same wireless radios in ComEd’s smart meters
- Web-based streetlight management software provides central management of streetlights and future “smart city” applications
- Benefits include:
 - Improved security, safety, and resiliency
 - Energy & maintenance savings
 - Platform for future smart cities applications⁴⁰

ComEd[®]

An Exelon Company

powering lives