

IPWMAN

Ameren Emergency Response Overview



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Crisis Management Group



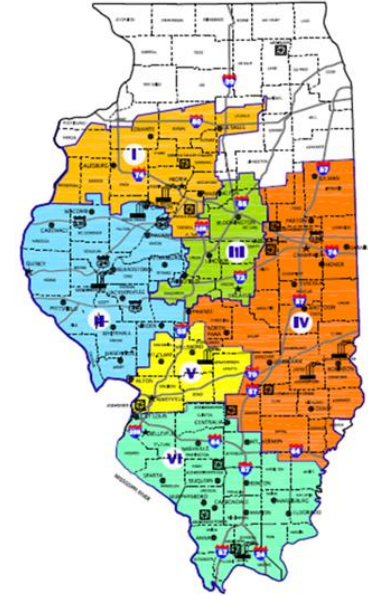
Agenda

- Ameren Orientation
- Response Structure
- Span of Control
- Life Cycle of Restoration
- Communications
- Major Events
- Wire Down / Wire Burning Report



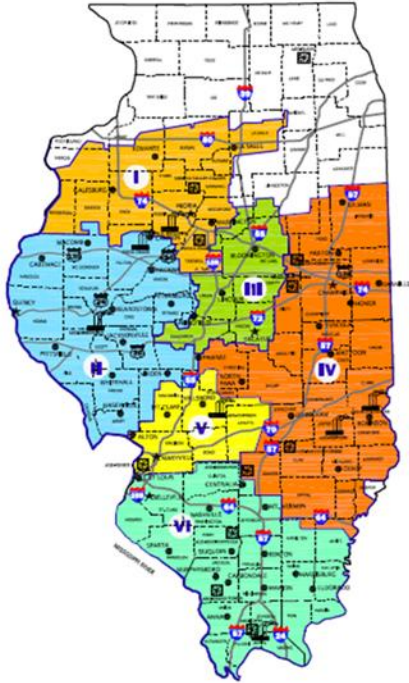
Ameren Illinois Orientation

- **Headquartered in Collinsville, Illinois**
 - 6 Operating Divisions
- **Employees**
 - 3,164
- **Customers**
 - 1.2 Million Electric Customers
 - 816,000 Gas Customers
 - 1,200+ communities located in central and southern IL
 - Service territory spans 43,700 square miles
- **Delivery System**
 - 4,500 miles of Electric Transmission Lines
 - 46,000 miles of Distribution Lines
 - 18,200 miles of transmission/distribution mains
 - 12 underground storage fields



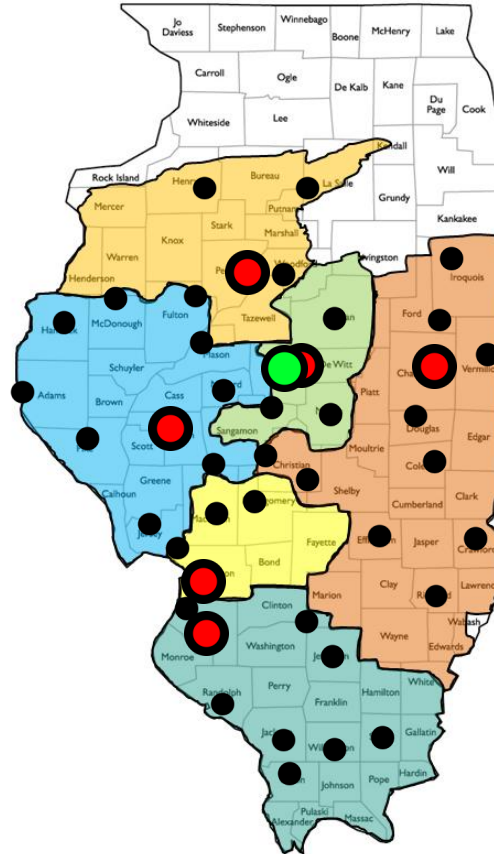
Ameren Illinois Orientation

Rural Coops within territory



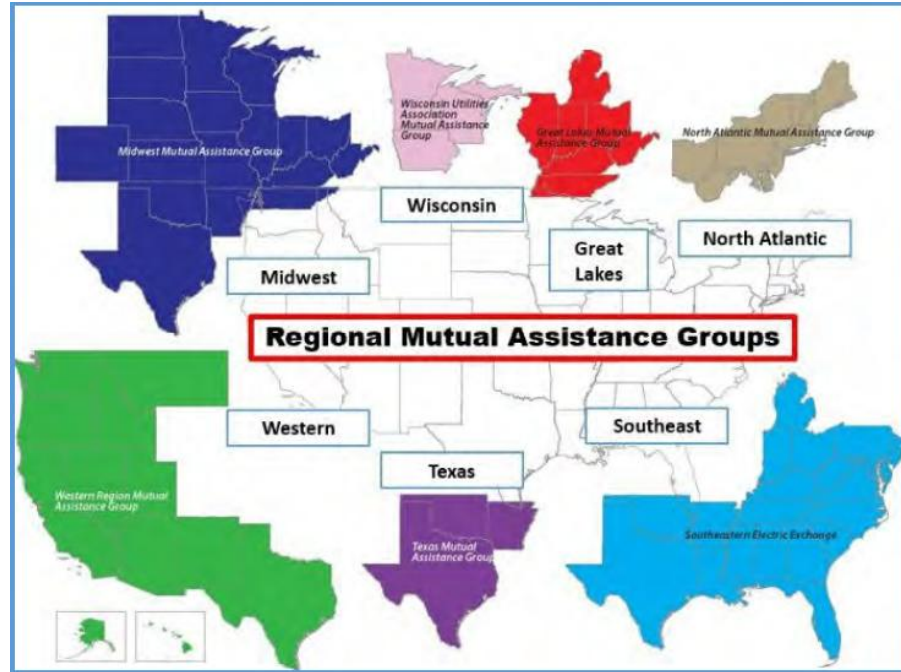
Ameren IL Response Structure

- Division Operating Center
- Division Command Center (DCC)
- Emergency Operations Center (EOC)



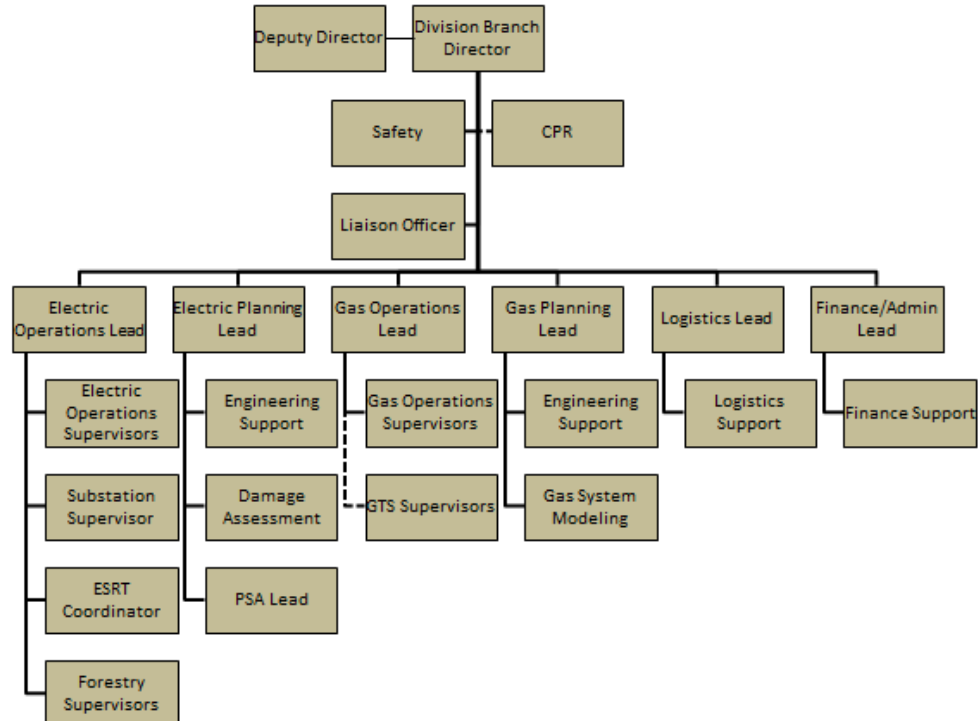
Ameren IL Response Structure

- Ameren Linemen
- Alliance Contractors
- Mutual Assistance
(Normally not on property
Contractors and Foreign Utility)

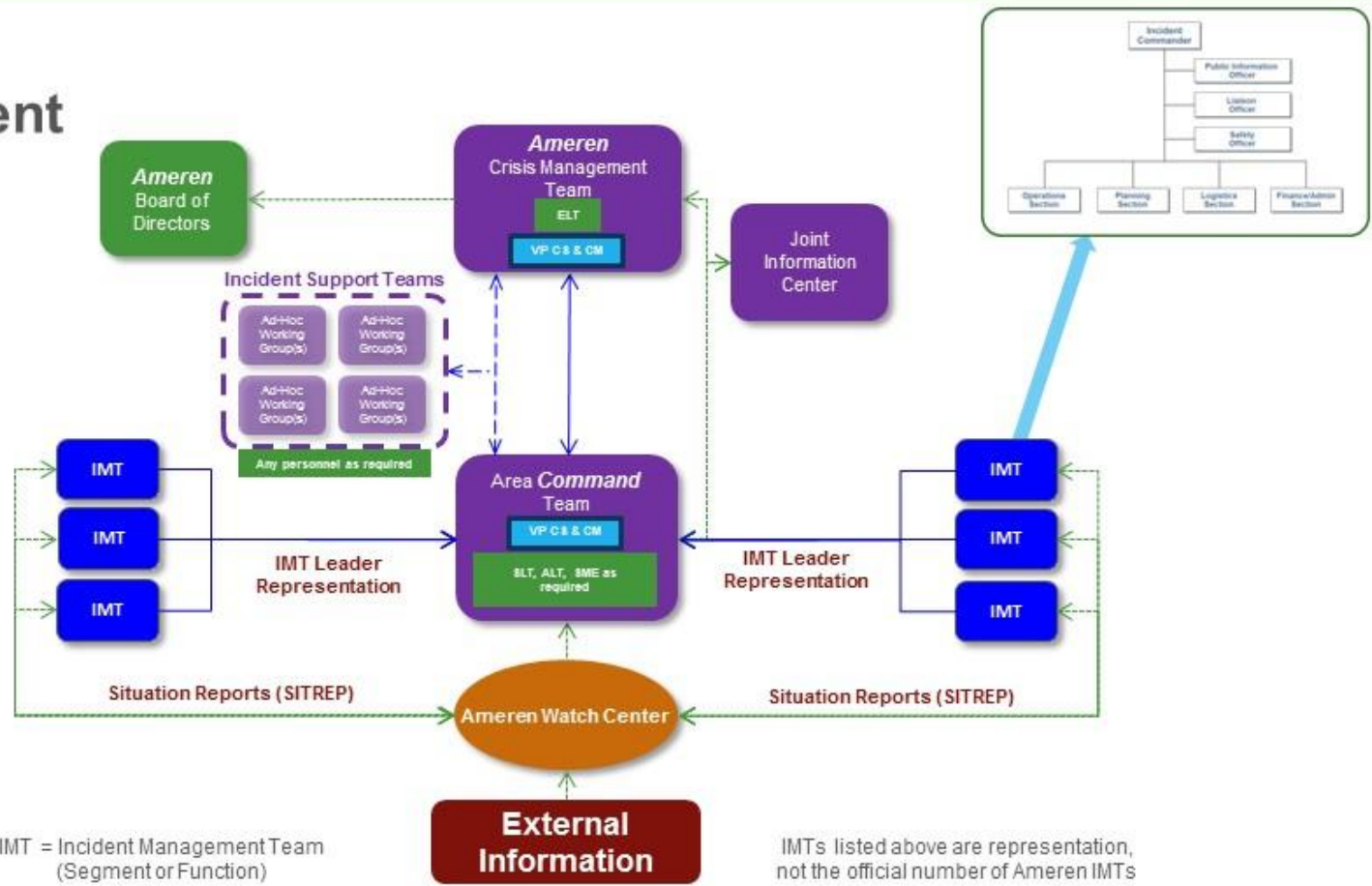


Span of Control

AMEREN ILLINOIS INCIDENT MANAGEMENT TEAM – DIVISION LEVEL



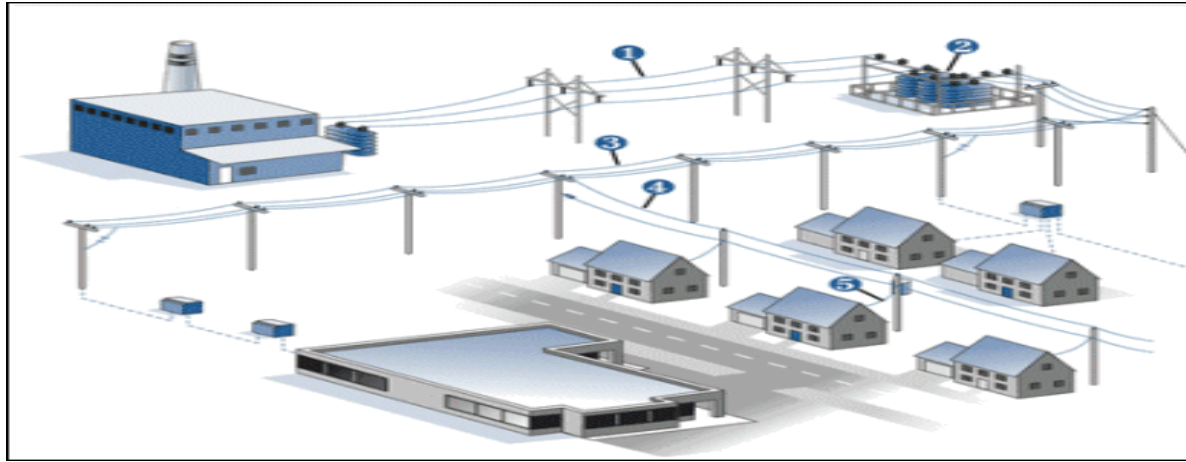
Crisis Management Structure



IMT = Incident Management Team
(Segment or Function)

IMTs listed above are representation,
not the official number of Ameren IMTs

Where does the power come from?



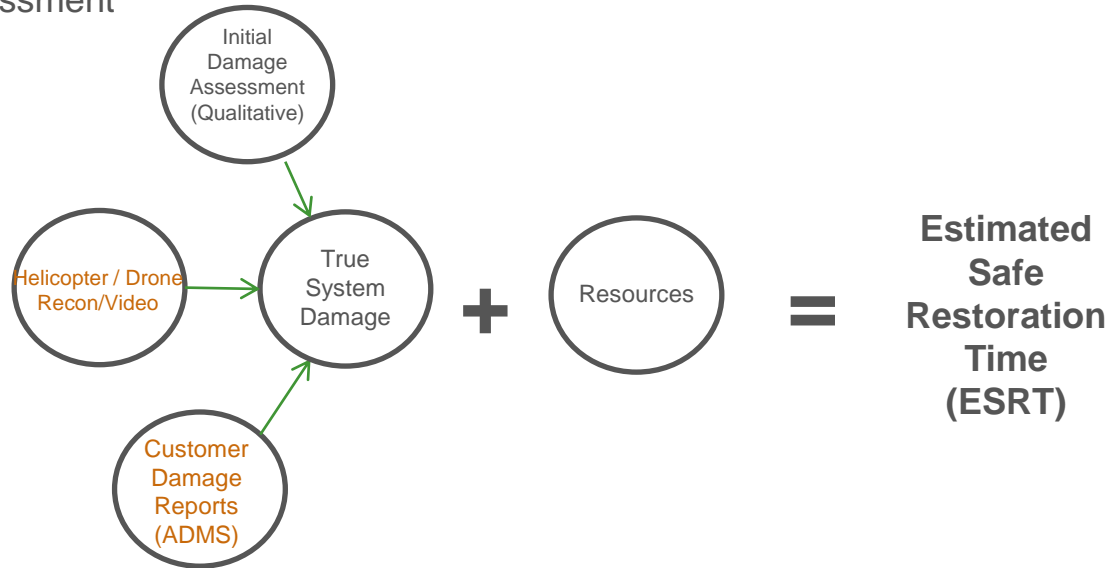
- 1) Electricity travels from the power plant over high-voltage transmission lines.
- 2) At a substation, the electricity's voltage is lowered so that it can travel over the distribution system.
- 3) Main lines, or feeder backbones, carry electricity to primary taps.
- 4) These primary taps carry electricity to a neighborhood's distribution transformers.
- 5) Service drops carry electricity from pole-mounted transformers – which lower the voltage again – to your home.

During a storm restoration, work crews move from the top of the system (#1) to the very bottom (#5).

NOTE: The grid is rapidly experiencing a proliferation of distributed generation (Solar)

Life Cycle Of Restoration

Damage Assessment



Stability and Scope



What do we do during the Storm Restoration Process?

- Matters of public safety such as Wires Down or Wires Burning are always taken care of first
- In the restoration process the power to critical care facilities such as hospitals and nursing homes will be restored first
- Emergency services and first responder facilities such as police and fire stations will be restored before moving to residential neighborhoods and schools.
- Monitoring systems then look at efficiency for restoring and repairs - “What can we do to get the largest number of people restored with the least amount of work?”
- Individual service lines are restored last.

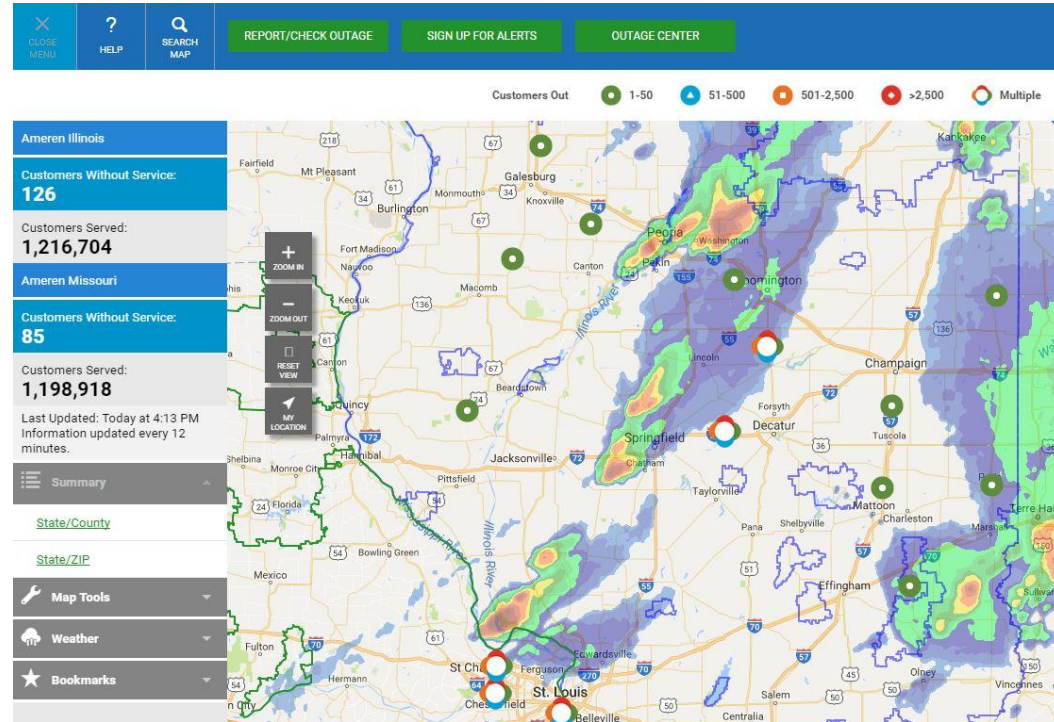
Note: Many restorations can and may occur simultaneously



Communications

Outage Map

- # of customers affected
- Outage time and cause
- Estimated Safe Restoration Time



2018 Annual Stats

as of 15 October

- NORMAL OPERATING DAYS - < 1000 Customers out – 253
- ADVISORIES – Potential for damaging weather – 31
- YELLOW ALERTS – Conditions exist that could cause damage – 9











Provider Definitions

Probability Table and Definitions					
None	Low	Medium	High	Very High	
<20%	20-40%	41-60%	61-80%	81-100%	
Event Type	Event Threshold				
High Winds (April - Oct, Non-Thunderstorm)	Sustained winds >35 mph and/or widespread gusts >50 mph				
High Winds (Nov-Mar, Non-Thunderstorm)	Sustained winds > 40 mph and/or widespread gusts > 50 mph				
Severe Weather (Wind and Tornadoes)	Thunderstorms with Wind Gusts > 50 mph and/or threats for tornadoes				
Heavy Snow	Accumulating Snow of 2" or more				
Freezing Rain/Ice (Galloping Conditions)	Ice Accumulating > Trace < 0.5"				
Freezing Rain/Ice (Infrastructure Damage)	Ice Accumulating >= 0.5"				
Heavy Rain/Flooding	Widespread lowland river flooding from ice jams or spring/summer excessive rainfall that creates regional road and highway closures				



Provider Definitions

Understanding Severe Thunderstorm Risk Categories					
THUNDERSTORMS (no label)	1 - MARGINAL (MRGL)	2 - SLIGHT (SLGT)	3 - ENHANCED (ENH)	4 - MODERATE (MDT)	5 - HIGH (HIGH)
No severe* thunderstorms expected	Isolated severe thunderstorms possible	Scattered severe storms possible	Numerous severe storms possible	Widespread severe storms likely	Widespread severe storms expected
Lightning/flooding threats exist with <u>all</u> thunderstorms	Limited in duration and/or coverage and/or intensity	Short-lived and/or not widespread, isolated intense storms possible	More persistent and/or widespread, a few intense	Long-lived, widespread and intense	Long-lived, very widespread and particularly intense
					
<ul style="list-style-type: none"> • Winds to 40 mph • Small hail 	<ul style="list-style-type: none"> • Winds 40-60 mph • Hail up to 1" • Low tornado risk 	<ul style="list-style-type: none"> • One or two tornadoes • Reports of strong winds/wind damage • Hail ~1", isolated 2" 	<ul style="list-style-type: none"> • A few tornadoes • Several reports of wind damage • Damaging hail, 1 - 2" 	<ul style="list-style-type: none"> • Strong tornadoes • Widespread wind damage • Destructive hail, 2" + 	<ul style="list-style-type: none"> • Tornado outbreak • Derecho
<p>* NWS defines a severe thunderstorm as measured wind gusts to at least 58 mph, and/or hail to at least one inch in diameter, and/or a tornado. All thunderstorm categories imply lightning and the potential for flooding. Categories are also tied to the probability of a severe weather event within 25 miles of your location.</p>					
		<p>National Weather Service</p> <p>www.spc.noaa.gov</p>			



Major Events

- **Distribution Line**

- 111 - Miles of Conductor
- 737 - Feeders Impacted - 9.5% of System
- 135 - Feeders Locked Out
- **148,388 – Total Outages**
- **912 – Distribution Poles Replaced**
- 1,674 - Cross-Arms Replaced
- 237 - Distribution Transformers replaced

- **Transmission Line**

- 14 – Circuits Locked Out
- 63 – Transmission Structures Replaced

- **Pace of Restoration**

Date	Time	Elapsed Hours	Customers Restored	% Restored
17 Nov 2013	11:30			
17 Nov 2013	24:00	Hour 13	74,092	50%
18 Nov 2013	03:00	Hour 17	111,291	75%
18 Nov 2013	10:00	Hour 24	124,300	84%
19 Nov 2013	10:00	Hour 48	140,969	95%
20 Nov 2013	24:00	Hour 74.5		100%

- **Substantial Long-Term Damage to Gas System**

- 543 – Gas Meters Impacted

- **Substantial Long-Term Damage to Electrical System**

- 1,054 - Electric Meters Impacted

- **Work-Force**

- **800+ Foreign Contractors**



Major Events

Total Restoration Resources in Illinois

Ameren Linemen	444
Contractor Linemen	1870
Mutual Assistance Linemen	301
Vegetation Clearing Personnel	613
Field Checkers/Damage Assessors	169
Stores/Material Management	50
Dispatch (Damage Assessment & Vegetation Management)	63
Fleet Services	35
Safety Professionals	8
Total Defined	3553
Field and Logistics Support	≈250
Grand Total	3800+

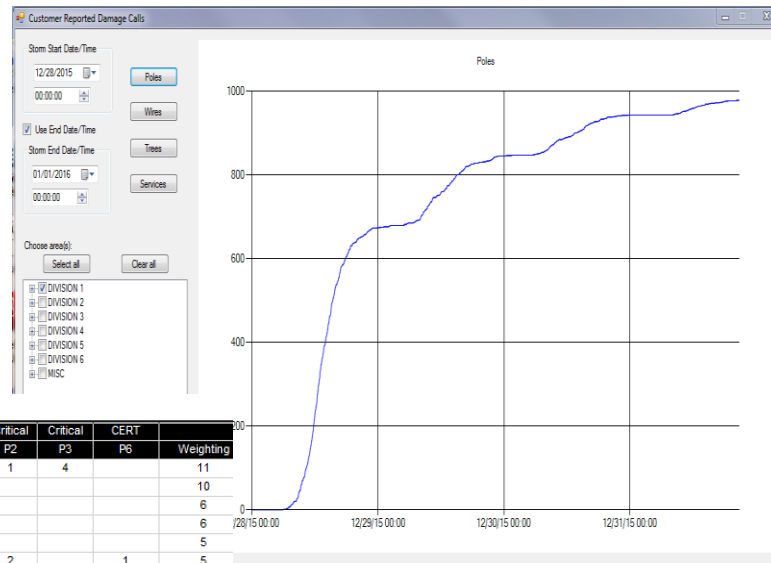
2615 Total
Line Personnel

NOV – DEC, 2006



Life Cycle Of Restoration

- Damage Assessment
 - Initial & Detailed
 - Stability & Scope Determination



Feeder Damage Assessment - By OC

Division	Feeder Damage OC	Feeder	Cust Feeder	CI	% Feeder	PD PB_PL Poles	PD_PB Poles2	TP_TW_TS Trees	WP_WB_WD Wires	Critical P1	Critical P2	Critical P3	CERT P6	Weighting
DIVISION 6	Belleville	BEL-J99-128	1278	1278	100.00%	1	1	14	14	4	1	4		11
DIVISION 6	Belleville	BEL-HB6-283	1025	1242	121.17%	6	5	12	10	1				10
DIVISION 6	Belleville	BEL-J99-121	1125	1416	125.87%			9	4	1				6
DIVISION 6	Belleville	BEL-J99-127	903	256	28.35%	6	6	21	11					6
DIVISION 6	Belleville	BEL-J97-115	189	189	100.00%	1	1	1	5					5
DIVISION 6	Belleville	BEL-J83-138	1003	348	34.70%	2	2	6	15		2		1	5
DIVISION 6	Belleville	BEL-J86-118	1073	227	21.16%	5	5	11	10					5
DIVISION 6	Belleville	BEL-R94-271	91	92	101.10%			1						4
DIVISION 6	Belleville	BEL-Q24-313	530	530	100.00%			3	1			1		4
DIVISION 6	Belleville	BEL-M30-301	155	155	100.00%	1	1	1	4					4
DIVISION 6	Belleville	BEL-J89-125	1240	1123	90.56%	1	1	8	2			1		4
DIVISION 6	Belleville	BEL-J89-126	1127	644	57.14%			11	5					4
DIVISION 6	Belleville	BEL-J83-137	944	180	19.07%	1	1	17	5					4
DIVISION 6	Belleville	BEL-J99-141	2074	256	12.34%	4	4	15	7					4
DIVISION 6	Belleville	BEL-J83-140	1615	114	7.06%	3	3	10	9	1				4
DIVISION 6	Belleville	BEL-R94-269	314	294	93.63%			1			1			3
DIVISION 6	Belleville	BEL-HC9-327	781	575	73.62%	4	2	8	7			1		3
DIVISION 6	Belleville	BEL-HD5-254	968	572	59.09%	1		7	8			2		3



Matters of Public Safety



Note that the car is in the line of this burn. Had the driver stepped out onto that wire it would have been catastrophic.

Matters of Public Safety



First part of the restoration process is to make things safe for the public

Matters of Public Safety



Sometimes the public just doesn't know.....

Source Of The Problem

Too many WD calls and not enough responders for any utility

Very similar across the industry

Date	Type	Peak Outage	Total Out	Duration Days	Poles	Tree	Service	WD/WB
2011 Apr 19	Tstorm	82,092	112,000	5	307	459	521	1463
2011 May 23	Tstorm	82,000	107,000	4	165	637	330	1055
2013 Nov 17	Multiple Tornadoes	148,433	148,388	5	302	267	458	1250
2015 Dec 28	Rain w/high winds	143,290	192,000	3.5	445	939	882	1087
2016 Feb 24	Wet Snow w/High winds	51,958	154,139	2	125	37	43	179
2016 July 13	Tstorm	100,853	118,741	3	213	756	509	742
2017 July 23	Tstorm w/High Winds	40,021	40,021	2	122	454	386	410



The Approach

- Our approach
 - Policy development and specifics
 - Using OMS energized status and customer locational data to establish the priorities
 - Reports
 - iDevice App



Policy

”Imminent danger” is defined as a situation that could reasonably be expected to cause death or serious harm to individuals that are either present, or likely to be present in the area of the wire issue.

1. Priority of Wires Down
2. Wire Down Report



Wire Down / Wire Burning Report

Customer WD/WB calls not on any outage Confirmed/Predicted. (Potentially Still Energized)

Div	OC	Feeder	Transformer	CALLERNAME	CALLERADDRESS	PHONE	CALLERCOMMENTS	EVENT#
3	Decatur	DEC-K91-117	370352205 20	Mrs Rogers			Debris cleaned up for streetlight lines and ready for lights to reconnect	IL.6151572.N O
3	Decatur	DEC-K95-208	3703511418 0	Beany Kalala			wire down from pole to pole that is wrapped around customers car in front of this address. adv pet	IL.6117260.N O
3	Decatur	DEC-M18-217	3703519782 0	Tom Mcdermth			Wire from the pole to the street light is on the ground with limb on it	IL.6147412.N O
3	Decatur	DEC-L23-146	3703518329 0	Chris-dispatch			customer reporting wire down that is drapping across the street; wires down- caution tape up	IL.6126944.N O
3	Lincoln	LIC-B53-001	3201070067 6	Brock			Mason county sheriff reporting Tree down and wires down. Police on scene.	IL.6117106.N O
3	Decatur	DEC-L11-242	3703517214 0	Scott Ackias				IL.6126948.N O

Customers WD/WB on Predicted Outages

Div	OC	Feeder	Transformer	CALLERNAME	CALLERADDRESS	PHONE	CALLERCOMMENTS	EVENT#
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Customer WDWB on Confirmed Outages

Div	OC	Feeder	Transformer	CALLERNAME	CALLERADDRESS	PHONE	CALLERCOMMENTS	EVENT#
3	Decatur	DEC-K28-183	3703519265 0	Tyler Morgenthaler			wires going to pole to pole across street are tangled up	3359941
3	Decatur	DEC-H01-194	3703515188 0	KRISTA CLARK			3353709	
3	Decatur	DEC-L35-137	3703517416 0				Wires down;	3359715

Non Customer WDWB

Div	OC	Feeder	Transformer	CALLERNAME	CALLERADDRESS	PHONE	CALLERCOMMENTS	EVENT#
3	Lincoln			Maris Cupi	rt 136 and 3rd SAN JOSE IL 62682	3092412292	live wire down tree over road, officers on scene waiting for us to kill line so tree can be removed	IL.6120904.NC
3	Decatur			operator 183	6800 block of w hill rd DECATUR IL 62526	2174295201	wire down due to a tree pulling the wire down.	IL.6155714.NC

Matters of Public Safety



Don't hesitate to call us!!!!

Sight – Bubbles near puddles of standing water

Sound – Hissing or whistling noise

Smell – Distinct, pungent odor like rotten eggs

Matters of Public Safety



Note: Not in our territory but always important to call

Matters of Public Safety

Call before you dig!



Closing

- 6 Operating Divisions
 - 3,164 total employees
 - 1.2 Million Electric Customers
 - 816,000 Gas Customers
 - 1,200+ communities located in central and southern IL
 - Service territory spans 43,700 square miles
 - Ameren Linemen 635
 - Contractors 850
- Restoration Process
- Wire Down report created
- Call before you dig





Questions/Discussion



Ameren

ILLINOIS

FOCUSED ENERGY. For life.