



Connecticut Energy, Environment and
Economic Development Conference:

Keeping the Lights On

Panel II: Are We Prepared?



Connecticut
Light & Power

Emergency Preparedness & Response

March 13, 2013

*Connecticut Energy,
Environment and Economic
Development Conference*

*Douglas S. McCracken
CL&P Director
Emergency Preparedness*



Northeast Utilities

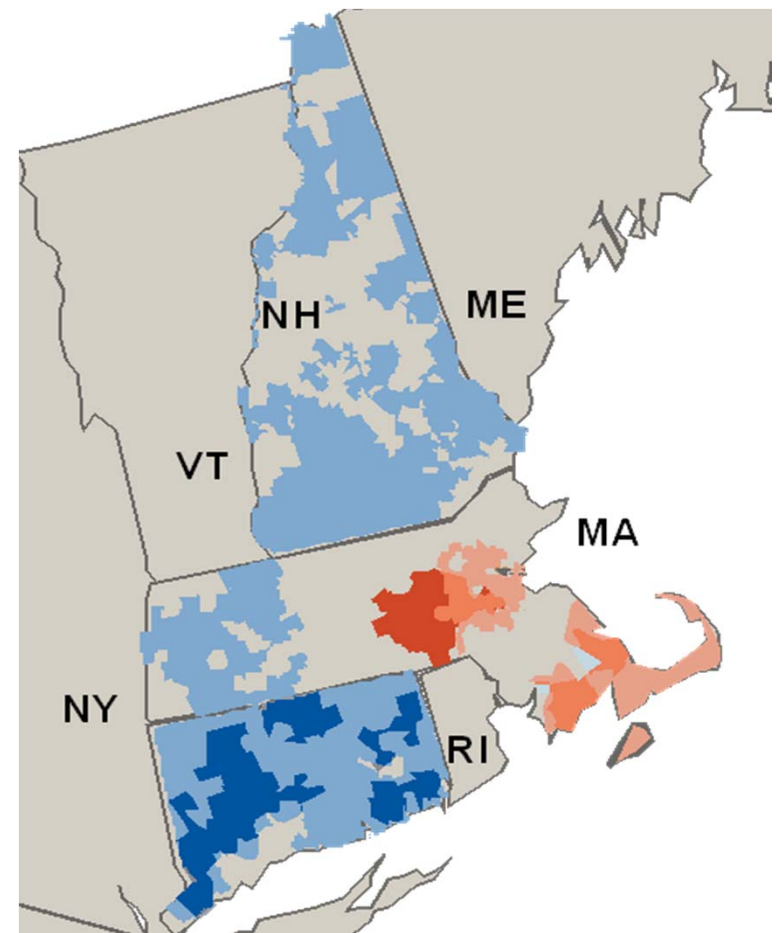


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2012 Merger with NSTAR

Combined, the new NU has:

- **Seven regulated companies**
 - Four electric companies
 - Two gas companies
 - One three-state electric transmission company
- **Serving 525 cities and towns throughout New England**
- **Providing reliable electric and gas service to:**
 - 3,000,000 electric customers
 - 500,000 natural gas customers
- **Leveraging investments for our customers and shareholders:**
 - \$12.4 billion combined rate base (2011)



Connecticut Light & Power



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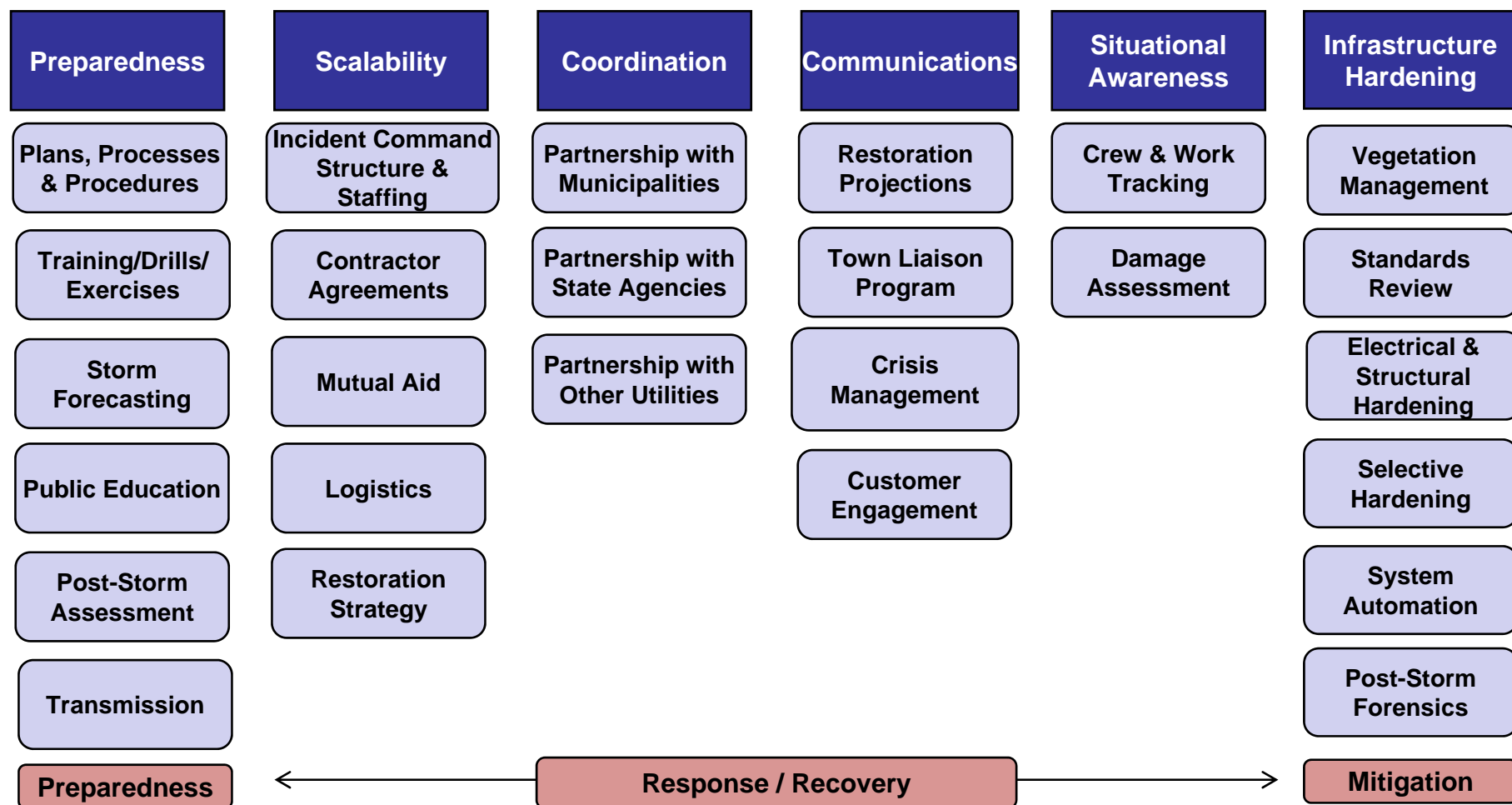
- **1,242,000 customers**
- **149 Connecticut cities and towns**
- **4,400 square mile service territory**
- **Distribution – 13 Area Work Centers**
 - 16976 overhead miles
 - 6352 underground miles
 - 219 substations
- **Transmission**
 - 1638 overhead miles
 - 135 underground miles

Emergency Preparedness Upgrade Program



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6 Focus Areas and 26 Initiative Areas



Emergency Plan Revision



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Restoration Strategies up to 100% Customers Out

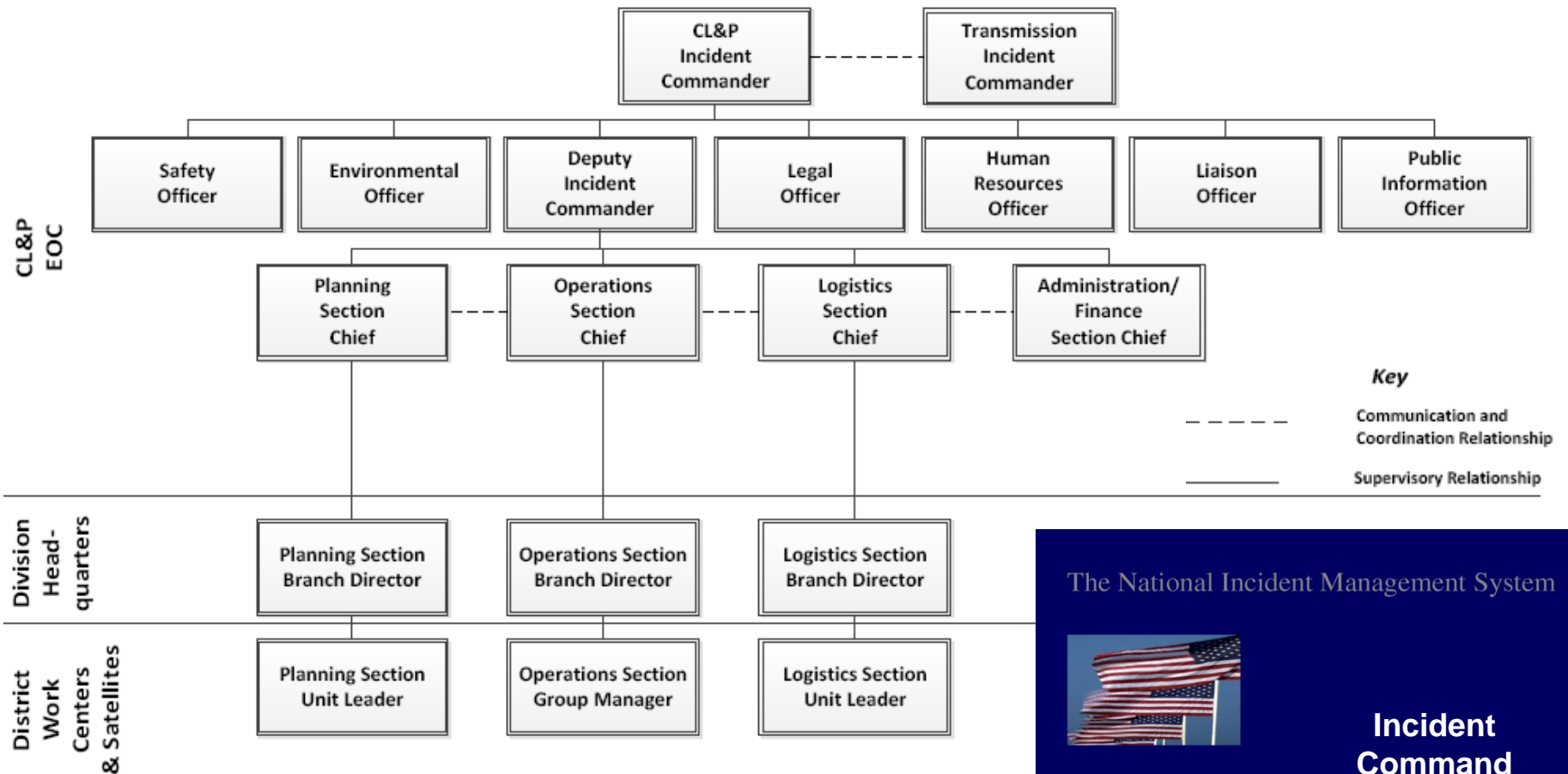
Event Level
Matrix
Identifies
Global ETR
Timeframe

Event Level	Typical Number of Customers out at Peak	Typical Number of Trouble Spots	Typical Restoration Duration	Typical Global ETR Availability Timeframe	Typical ICS Structure Activation Level	Typical Restoration Strategy
I	0% - 9% ² (<125k)	<2000	1-3 Days	< 24 hours	General Staff / PIO	Event
II	10% - 29% ² (125k – 380K)	1500 – 10,000	2-6 Days	< 36 hours	General Staff / PIO / All	Event / Hybrid (Event/Area by District)
III	30% - 49% ² (375K – 650K)	8,000 – 25,000	5-10 Days	< 48 hours	All ¹	Hybrid (Event - Area - Circuit by District)
IV	50% - 69% ² (625k – 870k)	15,000 – 48,000	8-21 Days	Global <48 hours	All ¹	Area - Circuit
V	70% - 100% ² (> 870k)	> 35,000	> 18 Days	Global <48 hours	All ¹	Circuit

Scalability - Incident Command Structure



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The National Incident Management System



**Incident
Command
Structure**



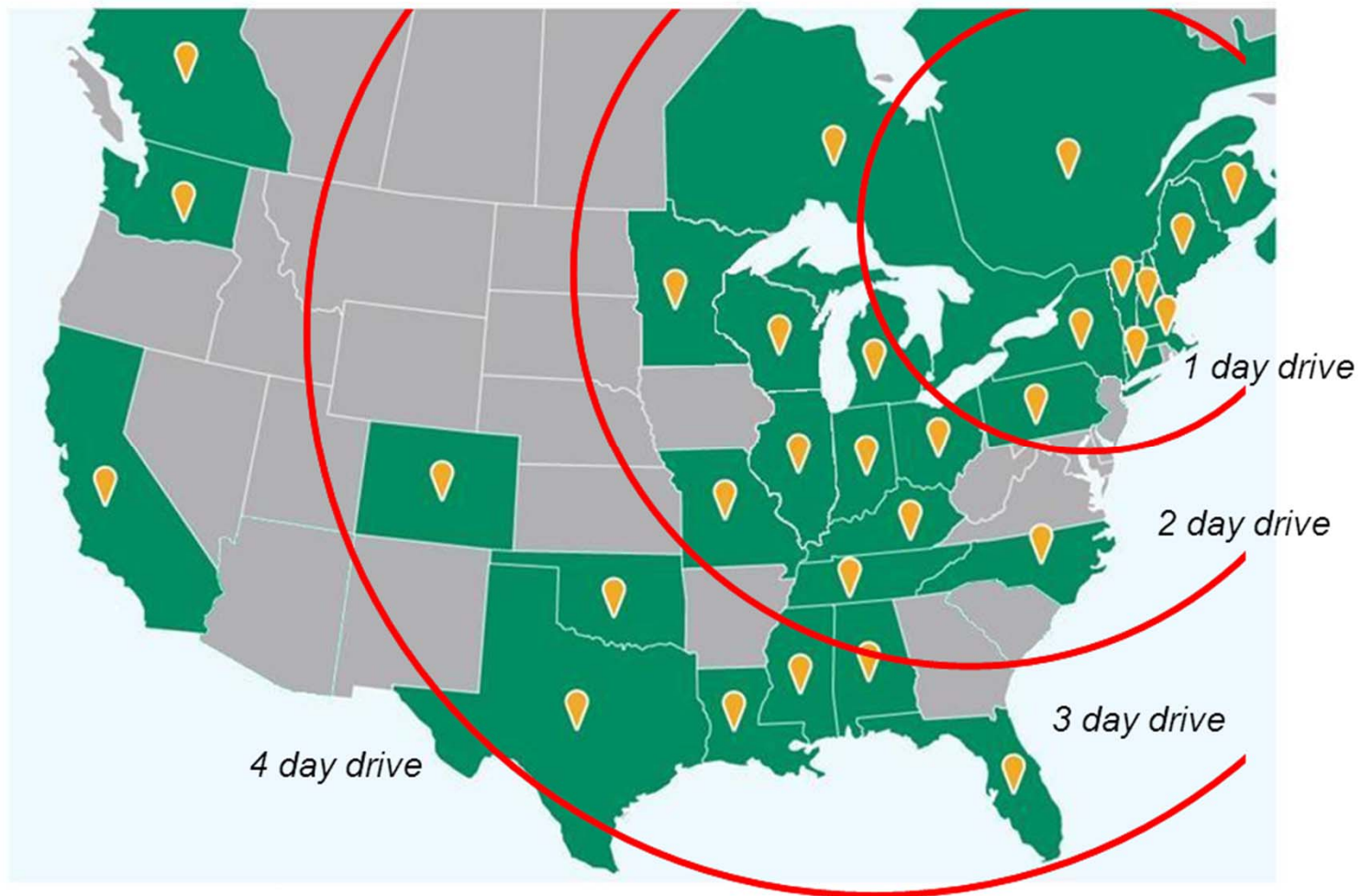
**Homeland
Security**

Scalability - Resource Acquisition



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Almost 3,000 external line resources from 25 states and 4 Canadian provinces assisted CL&P's Storm Sandy restoration efforts

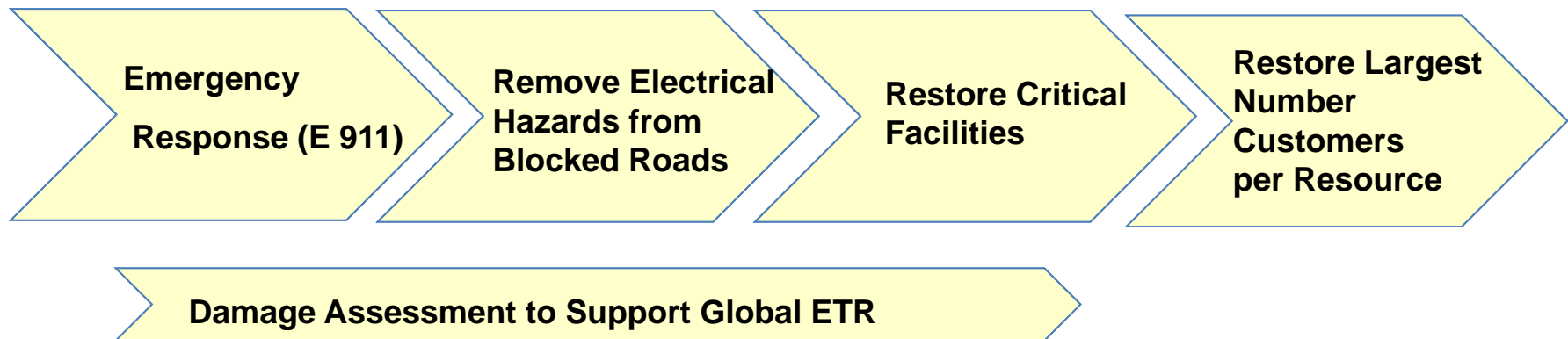


Emergency Response



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Restoration Priority Guidelines balance resources with the impact from agreed priorities with State authorities



Incident Action Plan from EOC

- Formal daily plan outlines goals and objectives consistent with the Emergency Plan

District Operating Plans (17)

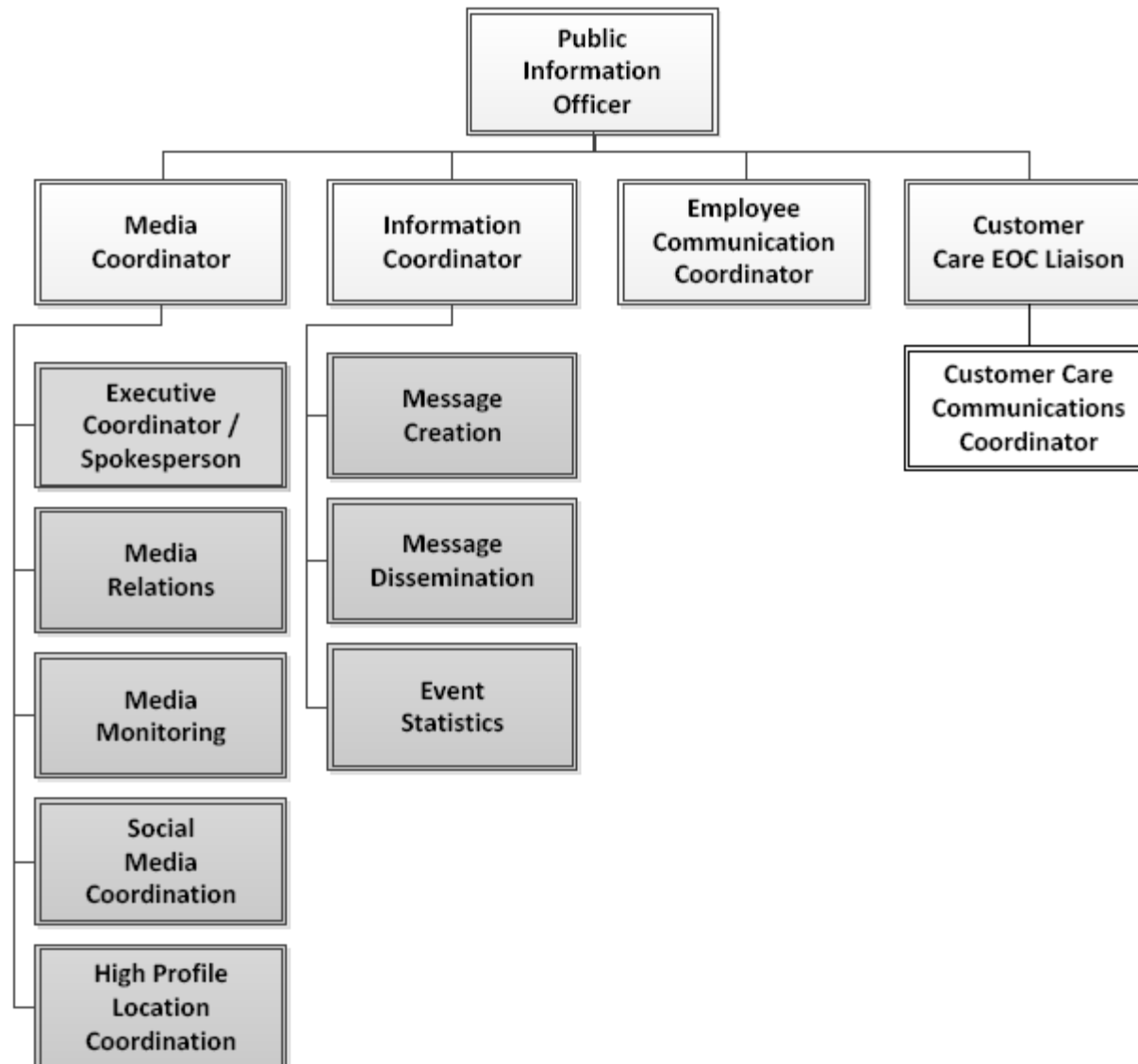
- Formal tactical plans support the goals and objectives

Communications ICS Reporting Structure



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Communications Priorities



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Communications to the Public as important as restoration

Operations

Damage Assessment

Resource Tracking

Estimated Time to Restoration

Global
ETR

Communications

Crisis Management /
Communications

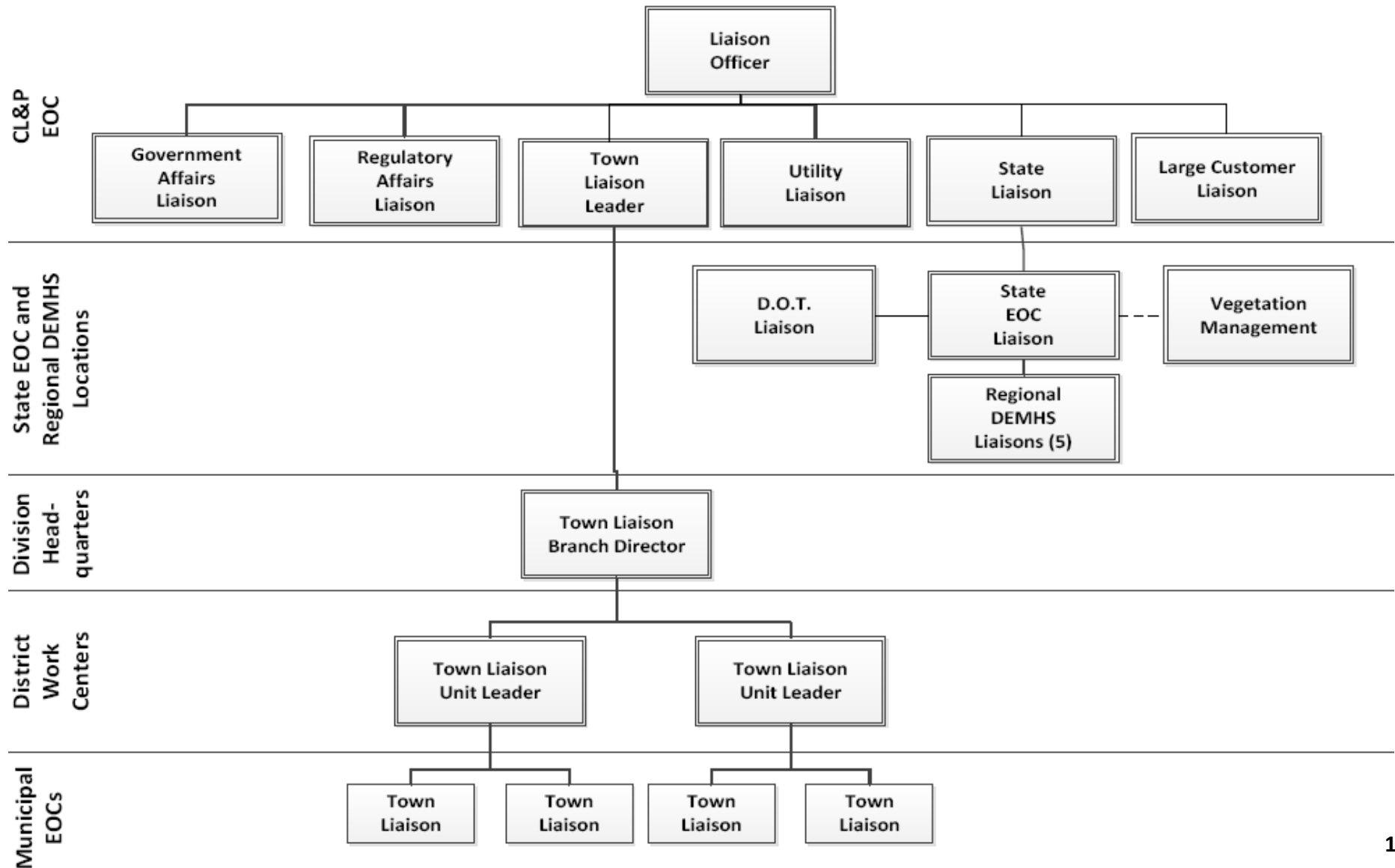
Town Liaison Program
/State Coordination



Liaison Organization ICS Structure



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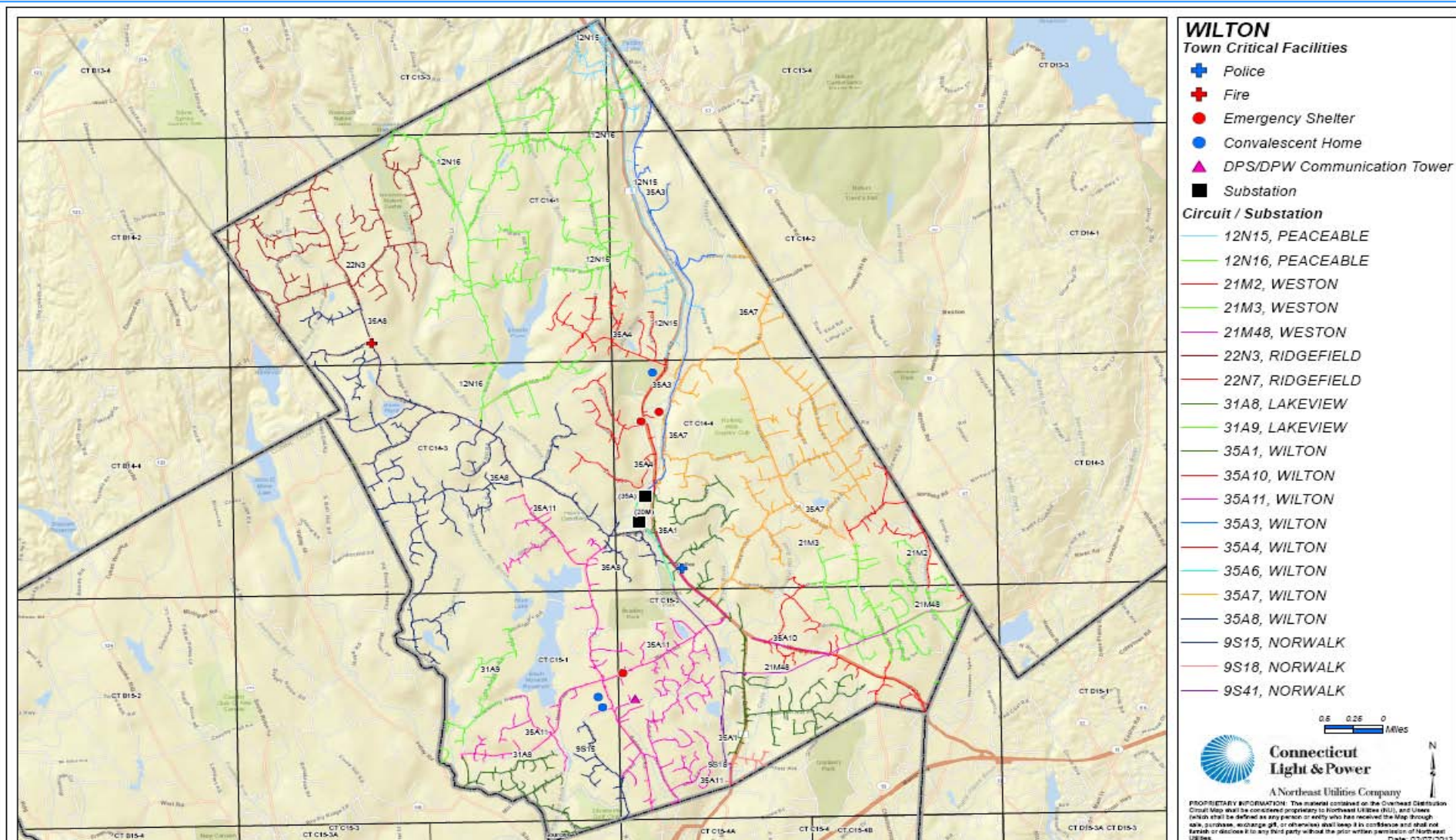
Situational Awareness – 11 x 17 Town Maps



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Pre-identified Critical Facilities





Situational Awareness – 11 x 17 Town Maps

Back-side: Critical Facility street addresses with circuits

Town Critical Customer	Town Priority Sequence	Name	Address	City	State	Circuit	Substation Name/Town Located	Date	Circuit / Customer
Police		Town Hall Complex (EMS/Police/Fire/DPW)	236-240 Danbury Rd	Wilton	CT	35A1	WILTON / WILTON	09/24/2012	12N15 / 269
Fire		Fire Station #2	707 Ridgefield Rd	Wilton	CT	35A8	WILTON / WILTON	09/24/2012	12N16 / 797
Emergency Shelter		Wilton YMCA (Shelter)	404 Danbury Rd	Wilton	CT	35A4	WILTON / WILTON	09/24/2012	21M2 / 91
Emergency Shelter		Miller School (Shelter)	217 Wolfpit Rd	Wilton	CT	35A11	WILTON / WILTON	09/24/2012	21M3 / 365
Emergency Shelter		Wilton High School (Secondary Shelter)	395 Danbury Rd	Wilton	CT	35A4	WILTON / WILTON	09/24/2012	22N3 / 514
Waste Water Treatment Plant		Waste Water Pumping Station (LOCATION UNKNOWN)	Danbury Rd	Wilton	CT	35A4	WILTON / WILTON	09/24/2012	31A8 / 173
Convalescent Home		Lourdes Health Care Center, Inc.	345 Belden Hill Rd	Wilton	CT	35A11	WILTON / WILTON	09/24/2012	31A9 / 90
Convalescent Home		Wilton Meadows Health Care Center	439 Danbury Rd (Route 7)	Wilton	CT	35A4	WILTON / WILTON	09/24/2012	35A1 / 872
Convalescent Home		School Sisters of Notre Dame Health Care	345 Belden Hill Rd	Wilton	CT	35A11	WILTON / WILTON	09/24/2012	35A10 / 314
DPS / DPW Communication Tower		DPS or DPW Tower/Communication Tower	46 Fenwood La	Wilton	CT	35A11	WILTON / WILTON	01/11/2013	35A11 / 1122
Other		Communication Tower	160 Deer Run Rd	Wilton	CT	22N3	RIDGEFIELD / RIDGEFIELD	09/24/2012	35A3 / 67
Other		Communication Tower	128 Mather St	Wilton	CT	35A3	WILTON / WILTON	09/24/2012	35A4 / 338
Other		Comstock Community Center (Warming Center)	180 School Rd	Wilton	CT	35A4	WILTON / WILTON	09/24/2012	35A7 / 764
Other		Wilton Library (Warming Center)	137 Old Ridgefield Rd	Wilton	CT	35A8	WILTON / WILTON	09/24/2012	35A8 / 1248
Date: _____ Town Official _____ CL&P Account Exec.: _____									9S15 / 107
									9S18 / 169

Situational Awareness – Event Status



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System event information available to Town Liaisons

Status of Critical Facilities

AWC: SIMSBURY AWC

Identified Critical Customers by Town for SIMSBURY AWC							
Avon	West Hartford	Simsbury	New Britain	Plainville	Hartford	Granby	Farmington
● Avon Old Farms	● Police	● School 2	● Police	● Police	● Hospital 1	● Police	● Hospital 1
● Sewage Plant 1	● Sewage Plant 1	● Sewage Plant 1	● Sewage Plant 1	● Sewage Plant 1	● Sewage Plant 1	● Sewage Plant 1	● Sewage Plant 1
● Hospital 2	● School 1	● Police	● Conv Home 1	● School 1	● Hospital 2	● School 1	● Hospital 2
● School 1	● School 2	● School 1	● School 1	● School 2	● School 1	● School 2	● School 1
● School 2		● School 2		● Conv Home 1	● School 2	● Conv Home 1	● Police
● Police				● Conv Home 2	● Police		
● Conv Home 2							
● Conv Home 1							

Towns

Patrolled events with Damage Assessment							
Town	Event	# Cust Affected	# Resource Hours	Customers per Crew Hour	Status	Referral Type	Remarks
Avon	191000	1000	40	25.00	ENR	LNE	Patrolled - 2 broken poles, 6 spans primary and 1 bad xf
Simsbury	191005	800	20	40.00	ENR	LNE	Patrolled - 1 broken poles, 2 spans primary. Large tree on wires needs removal
Simsbury	191002	300	20	15.00	UAS	LNE	Patrolled - 3 large oak trees on primary. Pole leaning with broken xarm
Avon	191003	100	5	20.00	UAS	LNE	Patrolled - tree needs removal from lines. 25KVA XF needs to be replaced at pole 567
West Hartford	191004	25	4	6.25	ENR	LNE	Patrolled - Sagging primaries ned to be rehung. Fuse neds replacing at pole 45678
Avon	191009	1	3	0.33	UAS	LNE	Patrolled - service neds to be rehung
Avon	191007	1	3	0.33	UAS	LNE	Patrolled - service ripped off pole. OK at house

Patrolled events

UnPatrolled events awaiting Damage Assessment							
Town	Event	# Cust Affected	# Resource Hours	Customers per Crew Hour	Status	Referral Type	Remarks
Avon	191011	570			NEW		
Simsbury	191012	345			UAS	PTL	
Simsbury	191013	234			NEW		
Avon	191014	100			NEW		
West Hartford	191015	11			UAS	PTL	
Avon	191016	1			UAS	PTL	
Avon	191017	1			UAS	PTL	

Damage remarks

Unpatrolled events

Situational Awareness – Event Status



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Event detail including ETR for Town Liaisons

Status

The screenshot displays the 'Outage Map' application interface. On the left, a map shows a residential area with streets like Loren Ln, Lisa Ln, Tackora Trail, Mamanasco Rd, Farrar Ln, Old Sib Rd, Grandview Dr, and High Pastures Ct. A blue dot marks the location of Farrar Ln. On the right, an 'Event Detail' pop-up window is open, showing the following information:

Event Detail	
Event Id:	1954436
Event Start:	1/5/2012 4:01:20 PM
Event State:	NEW
Division:	CT SOUTHERN
Region:	NEWTOWN AWC
Ctiy:	RIDGEFIELD
Street:	FARRAR LN
Circuit:	22N2
Customers Out:	62
Restoration Date & Time:	01-05-12 19:15
Device Name:	1P_RR:4339:10919314
Remarks:	

Arrows point from the text labels 'Status', 'Device Location', and 'Customers Impacted' to the 'Event State', 'Street', and 'Customers Out' fields respectively. To the right of the event details is a 'Device Details' panel with an 'Options' tab. Below the event details is a list of checkboxes for filtering events: Assigned (ASN), Enroute (ENR), Onsite (ONS), Show Non-Served Towns, and Enable 5 Minute Auto Refresh. At the bottom of the application, a status bar shows: 'Total CL&P Customers Served: 1,235,291', 'Total CL&P Customers Reported Affected: 185,145', and '% of CL&P Customers Reported Affected: 14'. The browser address bar shows 'javascript://pushin hover' and the local intranet URL.

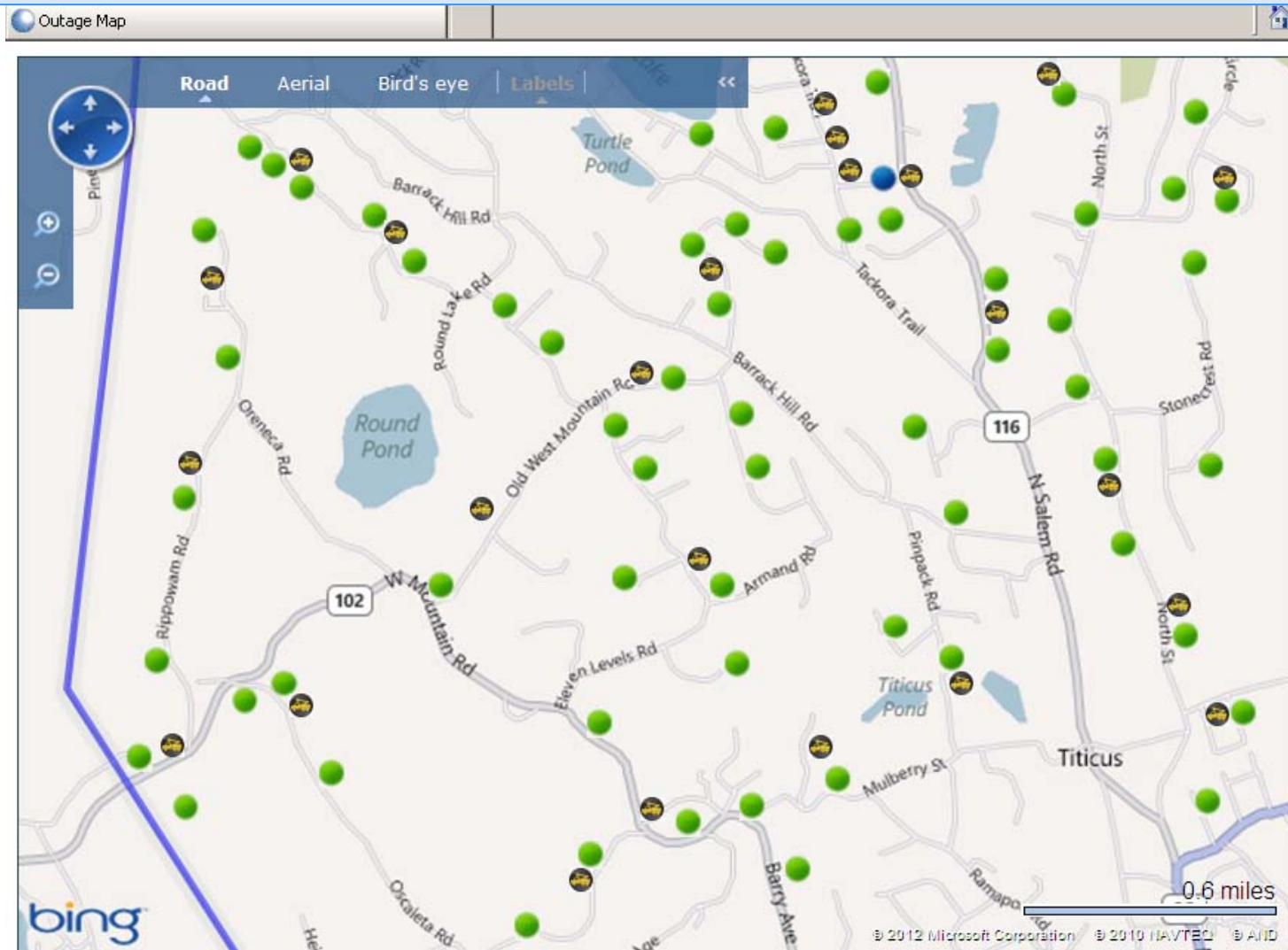


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Situational Awareness – Crew Locations

Event map with GPS tracking overlay

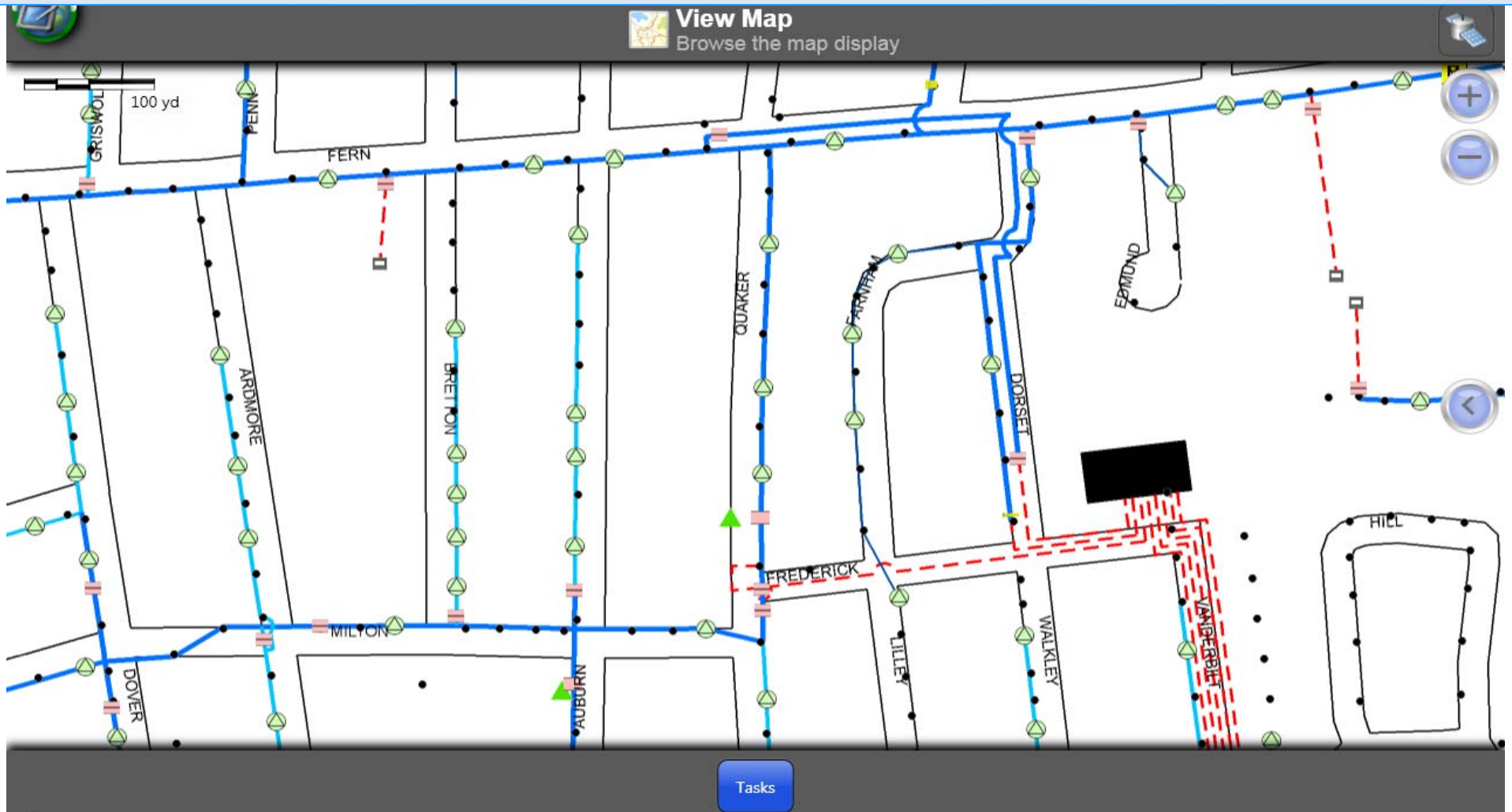


GIS-Based Damage Assessment Tool



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Mobile Application in development uses GIS equipment configuration inventory and Bluetooth/USB GPS device for navigation



July 12, 2012 Company Exercise with 6 Municipalities



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Formal Systematic Approach to Training (SAT) & Exercise Program



Statewide Exercise with 149 Municipalities



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- **Communications**
- **Make Safe**
- **Critical Customers**
- **Emergent Priorities**



**Scenario:
Category 3 Hurricane
July 28-31, 2012**



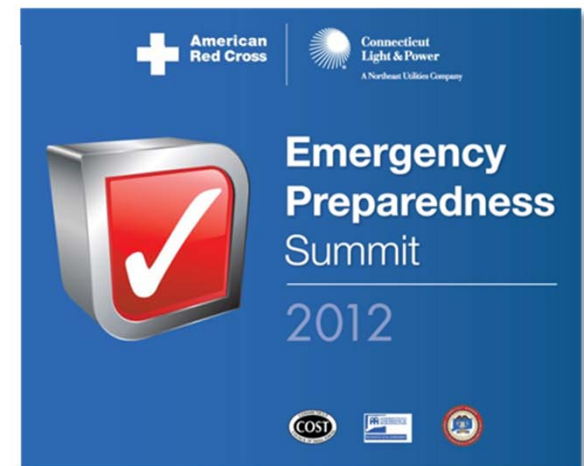
Public Education



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CL&P is working to educate the public on emergency preparedness

- Published restoration process information packets and video
- Conducted 'Storm School' for media
- Launching state-wide public information forums
- Enhancing crisis communications capabilities



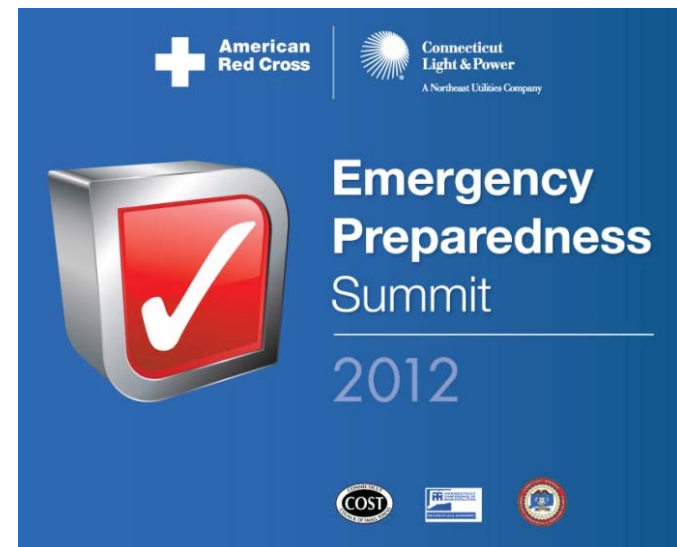
State Interface



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CL&P has enhanced its partnerships with the State

- DEHMS interface – 5 regions
- State Vegetation Management Task Force
- Debris Management Task Force
- GIS Task Force
- Technology Task Force
- Make Safe Task Force
- ESF 12 Task Force
- State Exercise Planning
- Preparedness Summits



Infrastructure Hardening



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CL&P's initial plan is a 5-year, \$300 million investment

**Vegetation
Management**

**Electrical &
Structural
Hardening**

**System
Automation**

**Selective
Hardening**



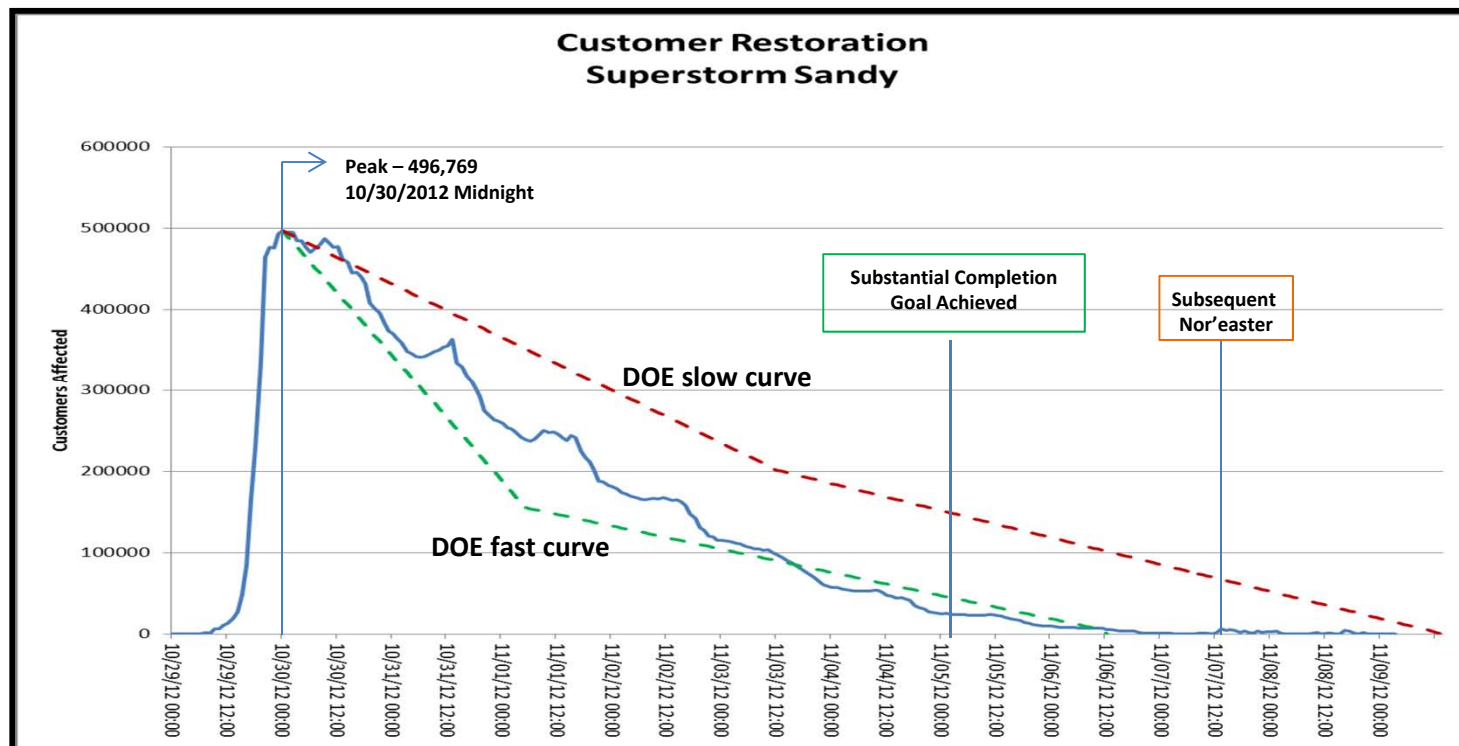
Storm Sandy - Restoration Performance



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CL&P delivered a strong event response and achieved all restoration goals

- Conducted comprehensive damage assessment by Day 2
- Announced statewide restoration goal
- Achieved statewide goal for substantially completing restoration on Day 6
- Achieved substantial completion goals in all 4 divisions on or ahead of schedule
- Effective external communication with media, municipalities and customers



Going Forward



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Each event presents unique challenges

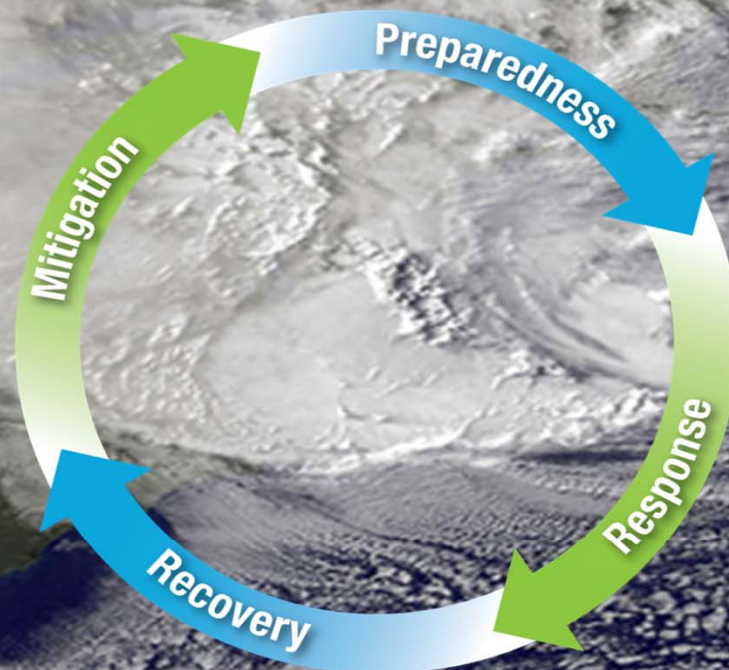
- **Continued partnering at all levels**
 - Leveraging volunteer organizations
 - Pre-staging interfaces & assistance agreements
 - Logistics
- **Mutual understandings**
 - Blocked road definition
 - ICS command structures
 - Restoration priorities & sequence
- **Continued education on electrical hazards**
- **Training & exercises**



***Being there for our customers
when they count on us most***



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Are We Prepared?

A Municipal Utility Perspective



Threats to Utility Systems

- Natural
- Human (Terrorism, etc)
- Market
- Regulatory



Preventative Measures

- “Hardening” the infrastructure
 - Tree Trimming (4 year cycle)
 - Locating “weak” spots in system
 - Micro-grid



Preventative Measures (cont.)

- Human Resources
 - Good Labor Relations (mission “buy-in”)
 - Cross Training Crews
 - Strategic Human Resources Management
 - Constant Training and Education
 - NPU Personnel are Local
 - Years of local / institutional knowledge



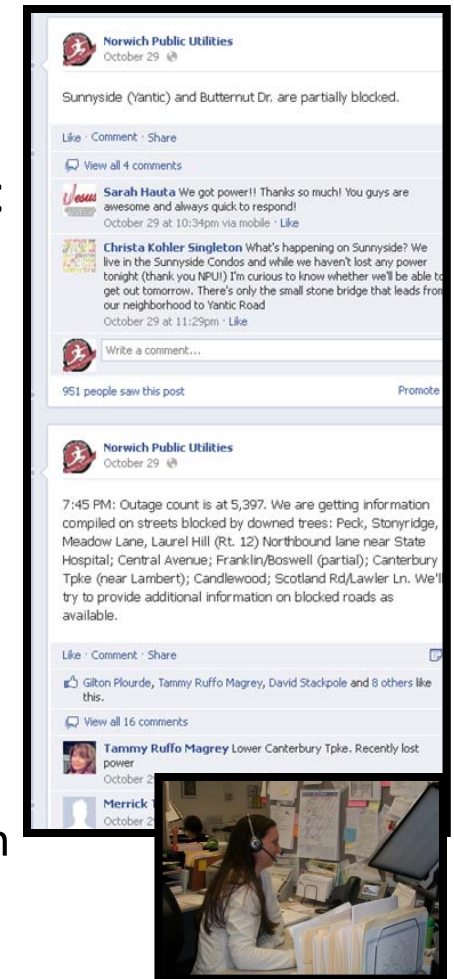
Preventative Measures (cont.)

- Local Response Coordination
 - NPU Hosts Norwich EOC
 - Norwich EOC Utilizes ICS Structure
 - NPU staff in EOC at all times
 - NPU staff at times serves as Incident Commander
 - NPU provides technical, logistical, and administrative support to Norwich EOC



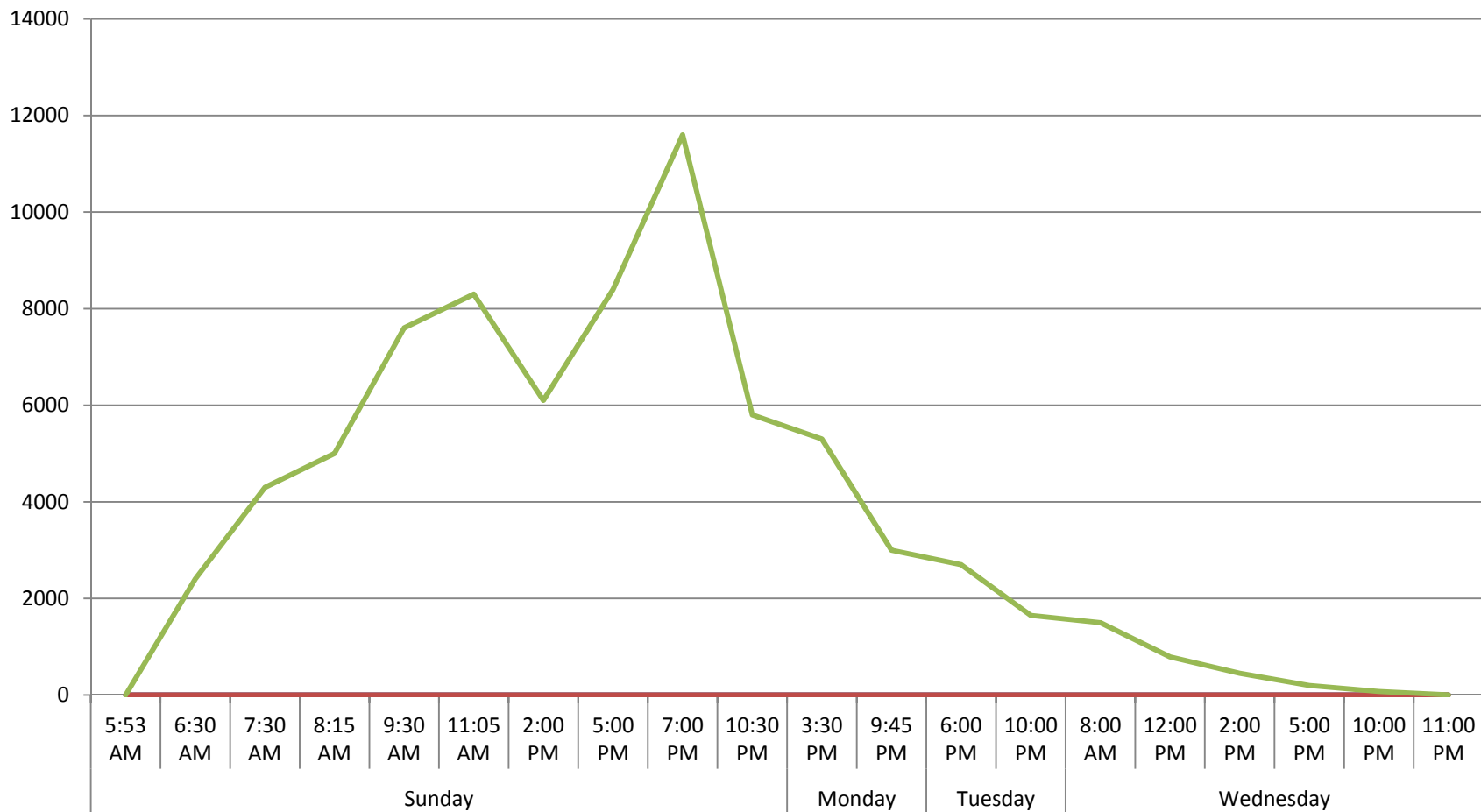
Preventative Measures (cont.)

- Customer Communication
 - We have found that a better informed public greatly improves restoration efforts
 - Customers speak to CSR's who are empowered and informed
 - IVR
 - New, easily updated website
 - Social Media
 - Staffed during emergencies to answer questions / concerns
 - Access to real-time information via “smart phone” in the event of a power outage



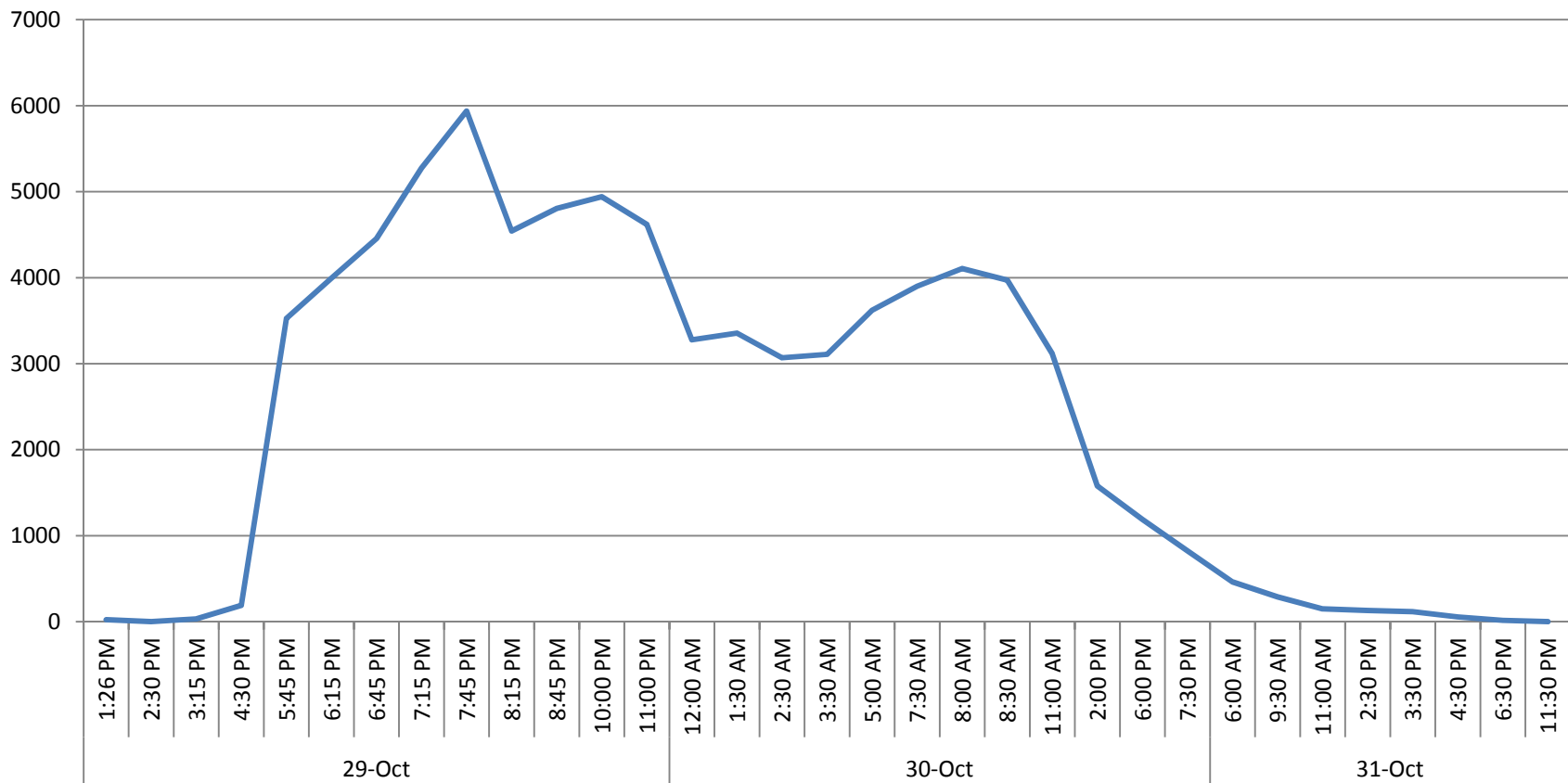
Storm Irene

Irene Outages and Restoration Time



Superstorm Sandy

Sandy Outages and Restoration Times



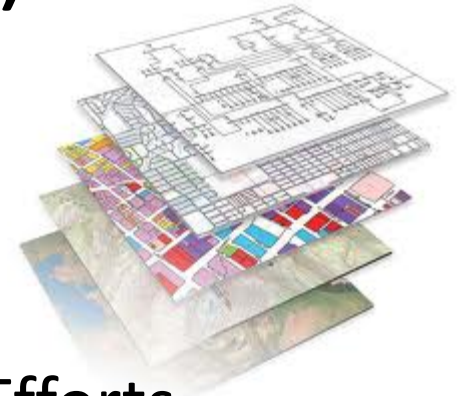
The Next Steps

- New Control Room and EOC
 - Tier 3 Data Center
 - 911 Dispatch Located in EOC During Emergencies
 - Greater Coordination of City Assets



The Next Steps (cont.)

- Leveraging Technology
 - Updating and Improving OMS
 - Coordination with GIS system
 - Continuing to Update Communication Efforts
 - Phase II Website (Mobile APP)
 - Phase II IVR
 - Tools to better communicate internally
 - Keeping abreast of social media trends



The Next Steps (cont.)

- Mutual Aid Changes
 - Northeast Public Power Association (NEPPA)
 - Leverage Technology to Improve the System
 - Expand the System to Include Nation-Wide Assets
 - Adjust Staff at NEPPA Level for Better Coordination



Are We Prepared?

- We Have a Good System in Place
- Not Resting on our Laurels
- Lessons Learned Lead to Changes
 - Plans
 - Staffing
- We Must Continue to Improve





Connecticut Energy, Environment and Economic Development Conference:

Keeping the Lights On



PowerHawke®



ui *The United Illuminating Company*



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**PULLMAN
& COMLEY_{LLC}**
ATTORNEYS

Pulling Together. Succeeding Together.

ROBINSON & COLE_{LLP}
ATTORNEYS AT LAW



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Housatonic River Project Emergency Planning

**Connecticut Energy, Environment and
Economic Development Conference**

March 13, 2013

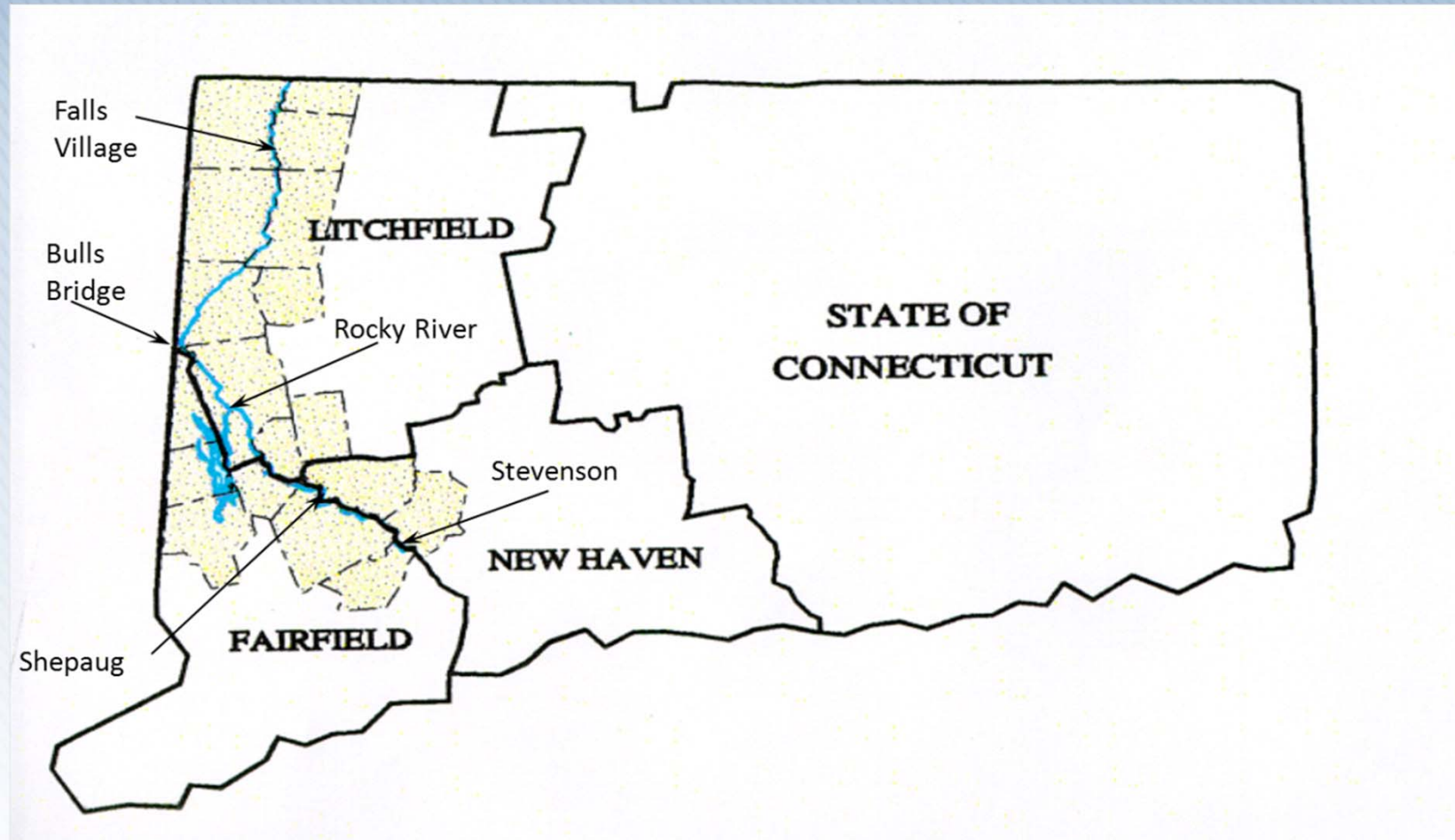


Introduction

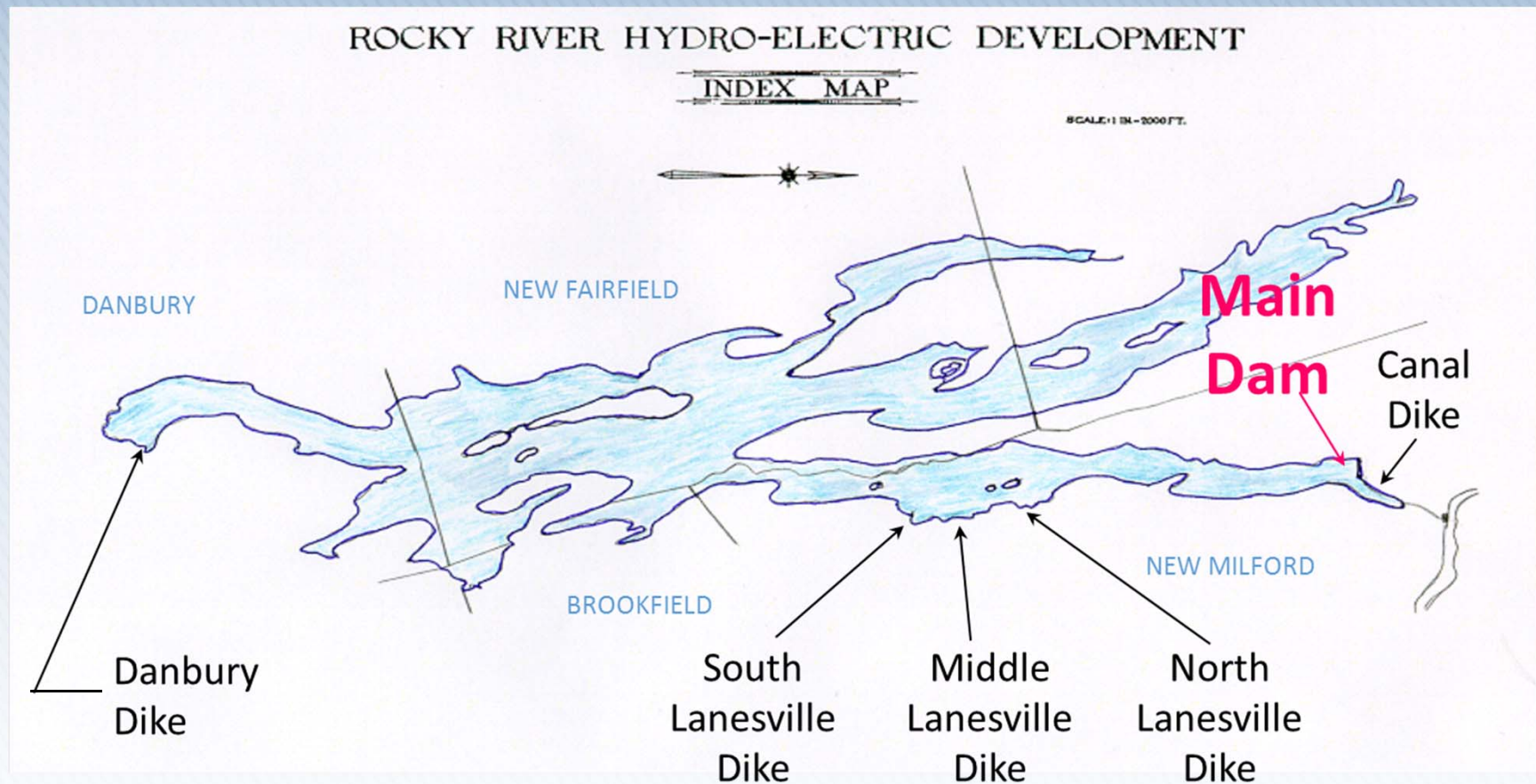


- Emergency Planning for worst case dam failure events
- Preparations and response to major storms
- Contingency planning for unanticipated events

Housatonic River System



Candlewood Lake



Rocky River Dam



Rocky River Main Dam



Shepaug Dam

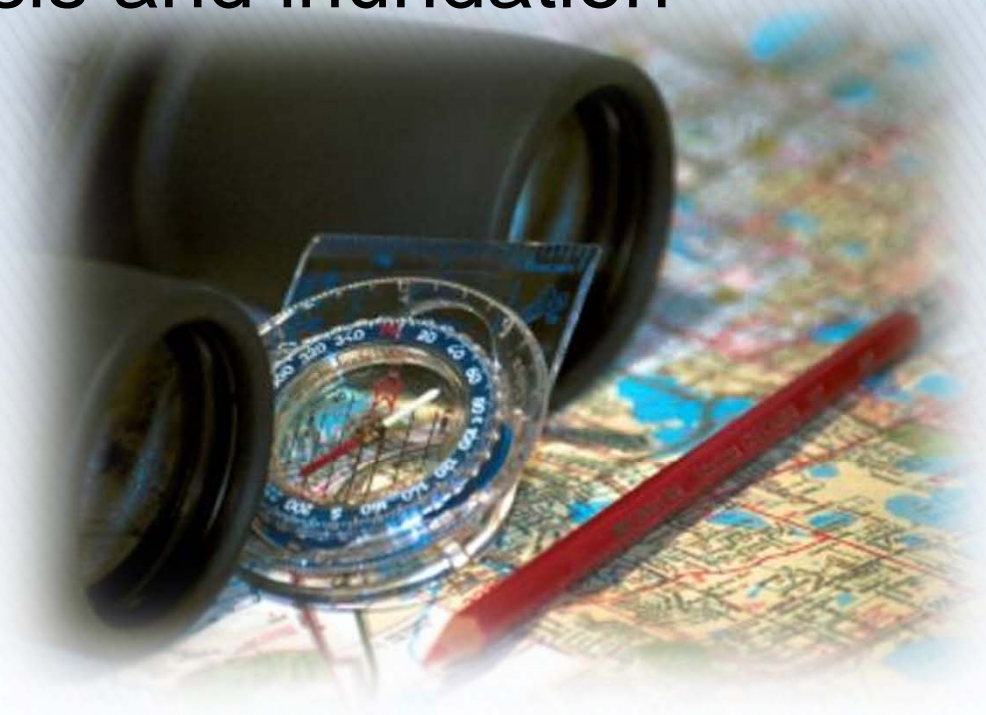


Stevenson Dam

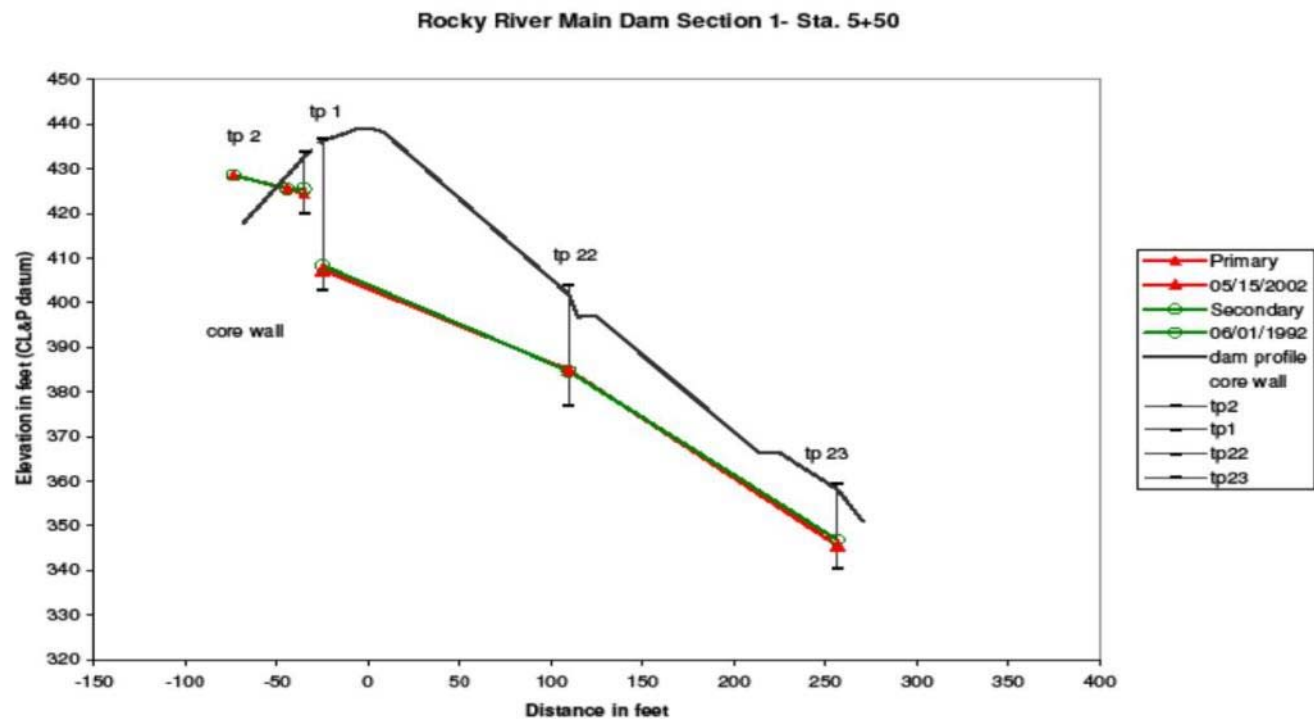


FERC Public Safety Requirements

- Dam monitoring and inspections
- Dam breach analysis and inundation mapping
- Emergency Action Plans
- Periodic Exercises

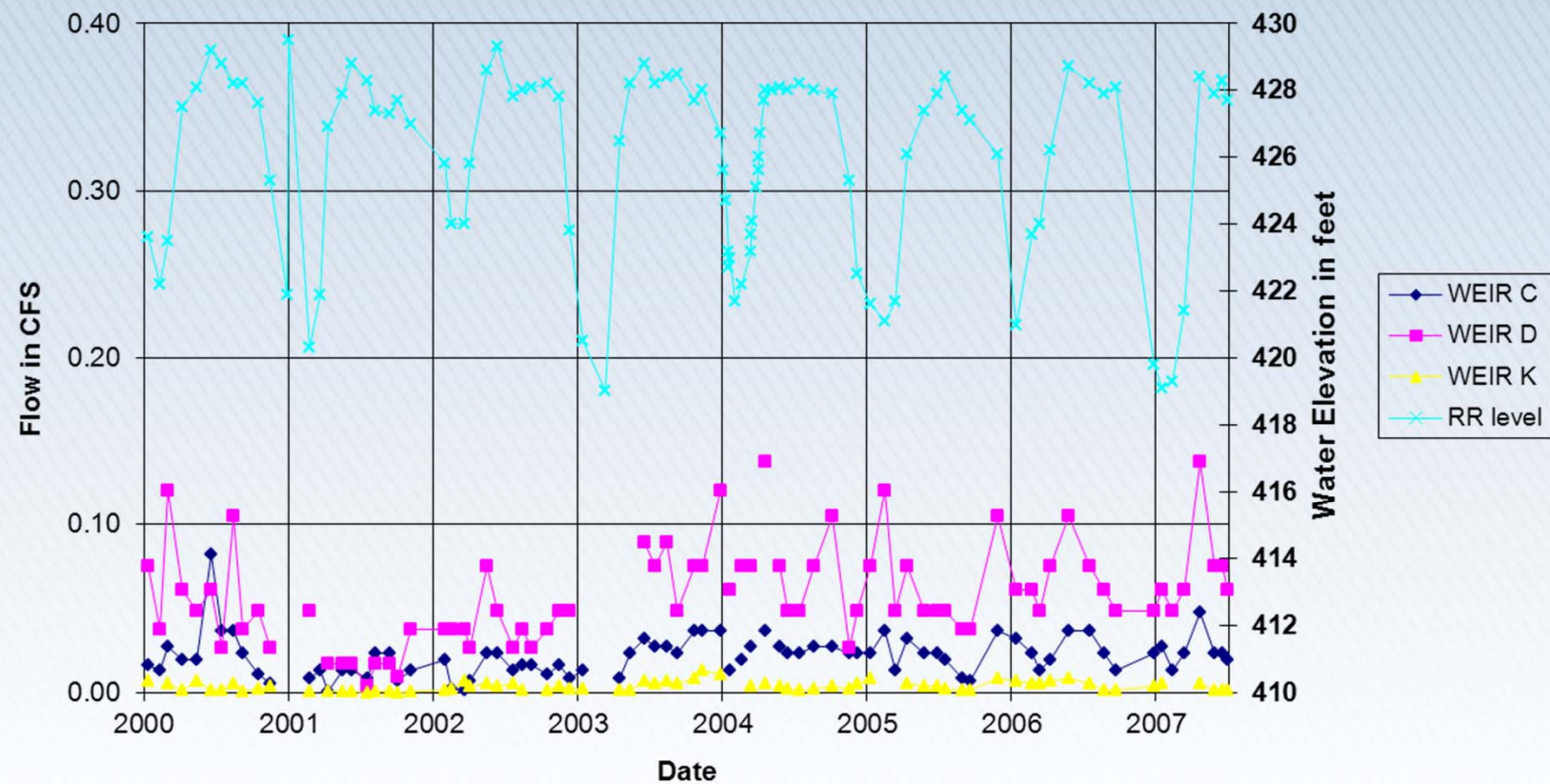


Routine Dam Monitoring



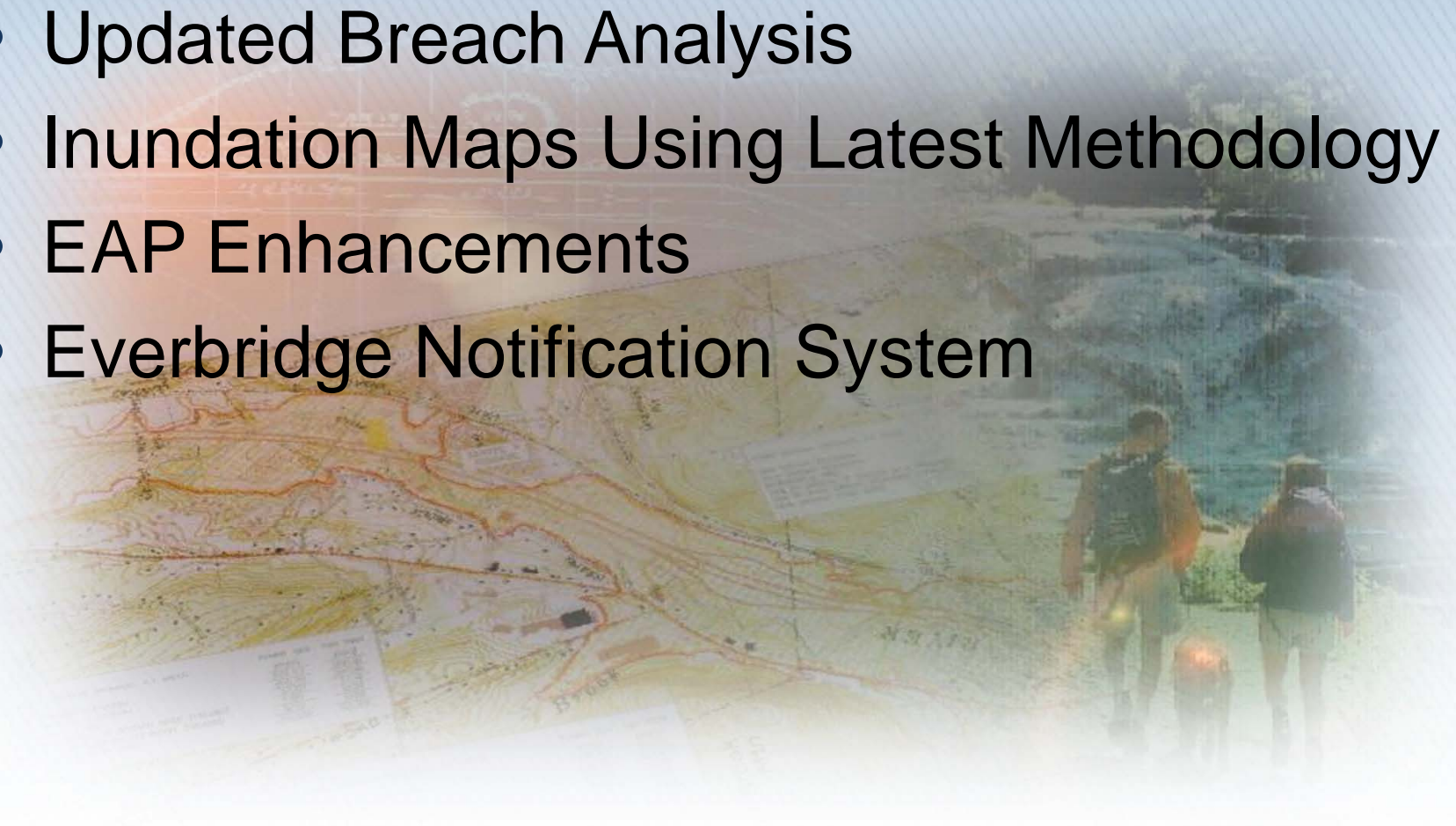
Dam Monitoring (cont.)

Rocky River- Main Dam Weirs



EAP Current & Future Improvements

- Updated Breach Analysis
- Inundation Maps Using Latest Methodology
- EAP Enhancements
- Everbridge Notification System



FERC Dam Breach Analysis & Inundation Mapping

- High hazard classification dams
- Modeling for “Sunny Day” and Probable Maximum Flood Events
- Mapping
 - Threat to life or property (2 ft inundation of “inhabited space”)
 - Cross-sections
 - ◆ Flood arrival and peak time
 - ◆ Peak flood elevation
 - ◆ Flooding increment height

FERC Emergency Action Plans

- I. Emergency Notifications
- II. Statement of Purpose
- III. Project Description
- IV. Emergency Detection, Evaluation & Classification
- V. General Responsibilities
- VI. Preparedness
- VII. Inundation Maps

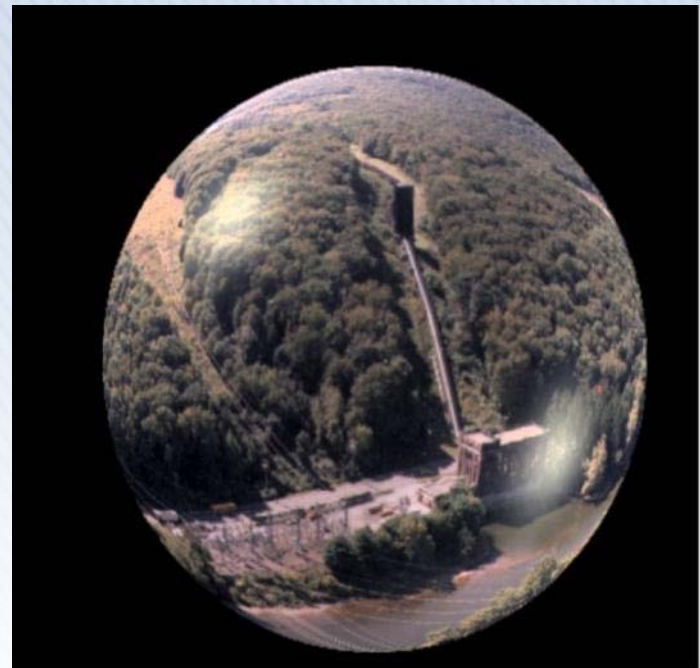
Appendices

Dam Breach Analysis; EAP Updating; Site specific Concerns
EAP Documentation

FERC Emergency Action Plan Exercises

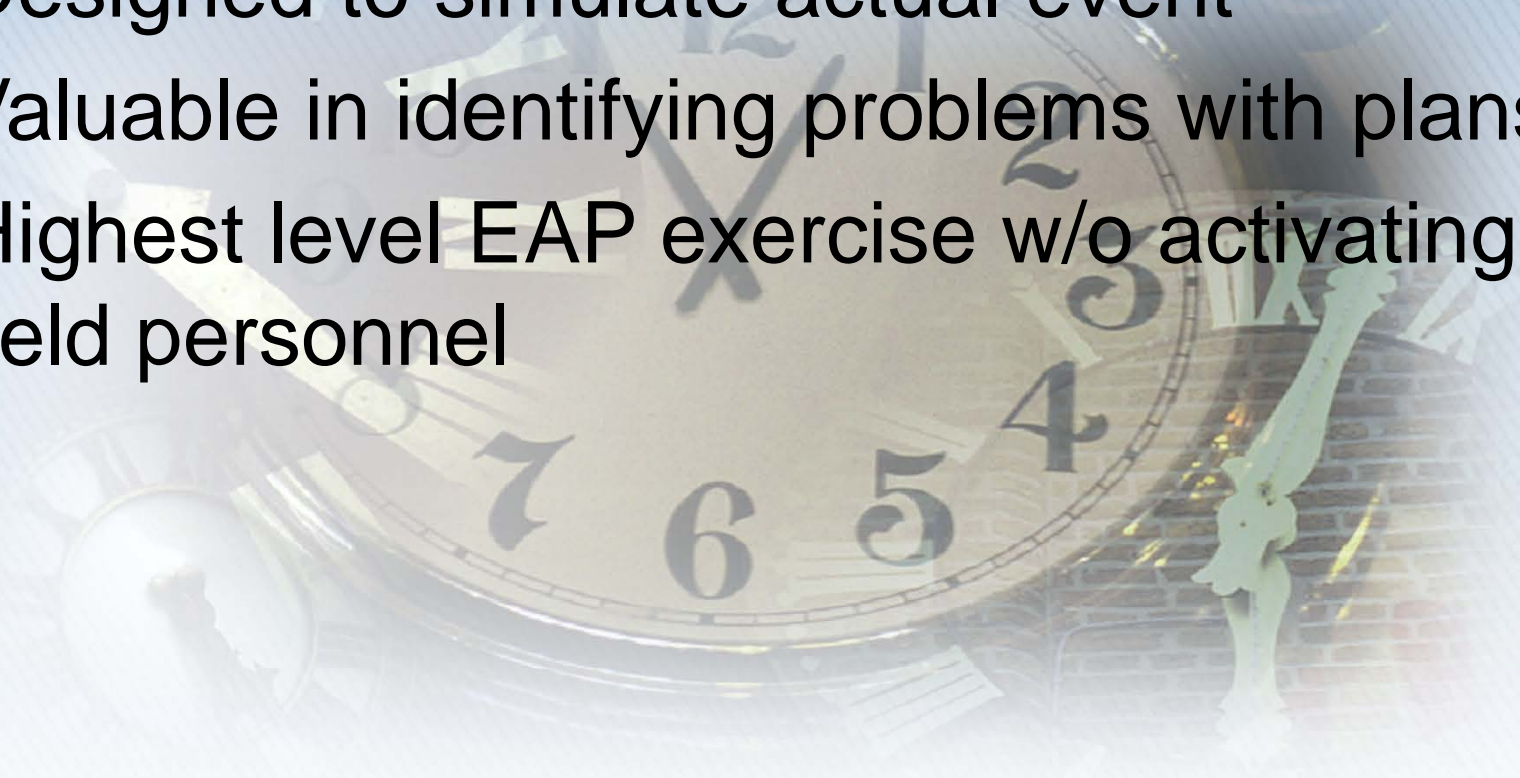
Five types of exercises:

- Orientation seminar
- Annual drill
- Tabletop Exercise
- Functional Exercise
- Full scale exercise



Functional Exercise

- Designed to simulate actual event
- Valuable in identifying problems with plans
- Highest level EAP exercise w/o activating field personnel



Goals of an Exercise

- Testing emergency functions:
 - Alert, notification, and warning
 - Evacuation
 - Interagency coordination
 - Transportation interruptions
 - Public information dissemination
- Preparedness and plans of FirstLight's and agency-specific materials & capabilities

Desired Outcome of an Exercise

- Increase awareness/use of the EAP
- Clarify roles and responsibilities
- Improve coordination
- Identify enhancements to the EAP/inundation maps
- Self assessment of ability to serve impacted communities



What if the Main Dam Failed?

- Using normal summer maximum elevation of Candlewood Lake, there would be a water release of approximately:
 - 167,000 Acre-Feet...or...
 - 7 Billion Cubic Feet...or...
 - 54 Billion Gallons of water



Rocky River Power plant ... 1-1/2 hours



Intersection - Rt. 7 & Rt. 202 ... 3-1/2 Hours

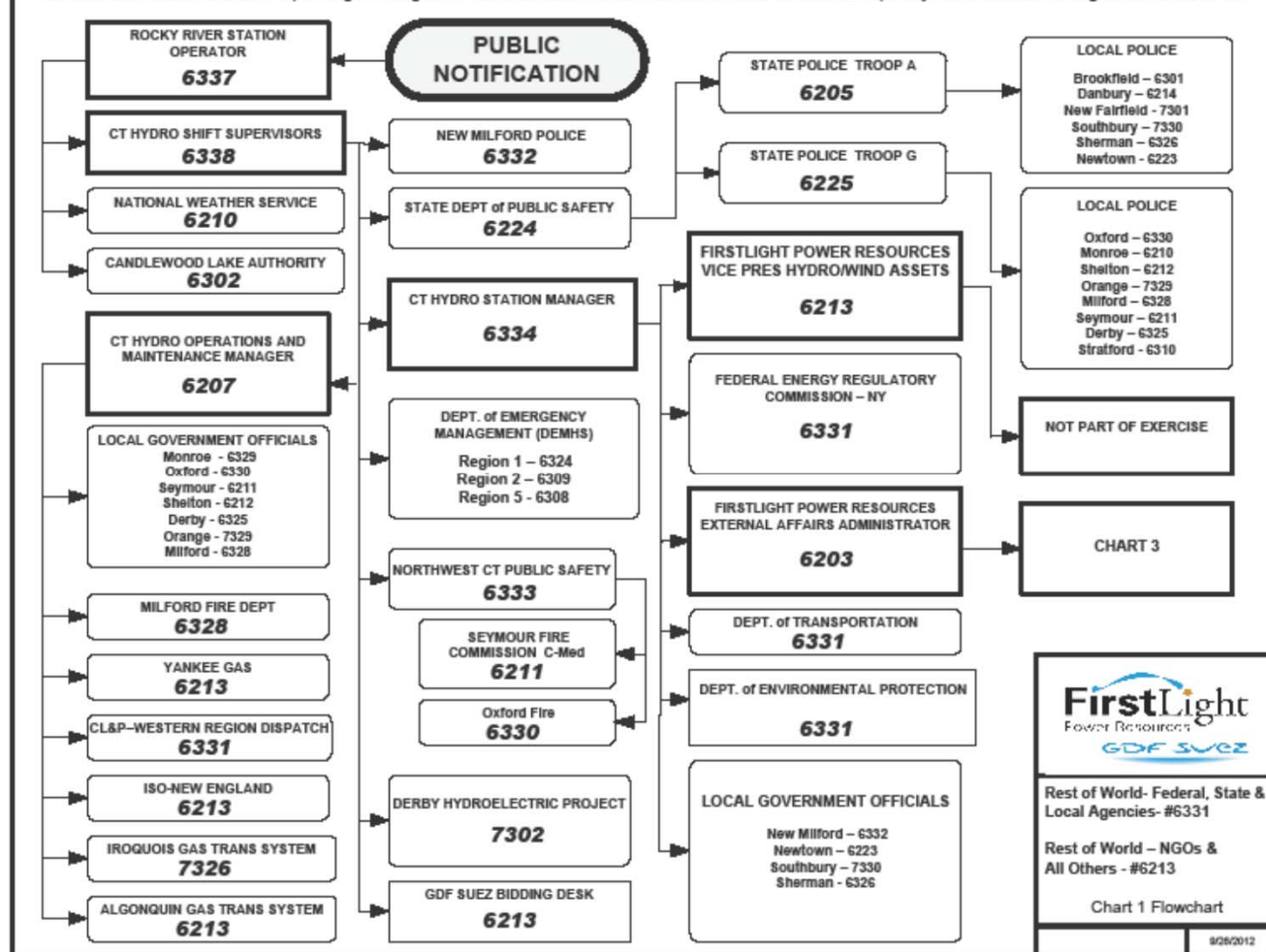


Exercise Format

- Functional Exercise requires about 2 hours of scenario time
- Reading / review of Narrative
- All Town agencies in one room - “local EOC”
- “Exercise simulators” place messages into play
- Group critique and lessons learned

Exercise Notification Checklist

NOTE: Must make direct contact, leaving a message is insufficient. In the event that direct contact cannot be made, notify the next individual/organization on the list.



Radio Communications

- Start and end of exercise
- Simulation of CSPERN and Emergency Alert System (EAS)
- Outgoing use limited to State Police (CSPERN); National Weather Service (EAS) ... no other external notifications

Planning for Natural Events

- Advance warning via use of a number of meteorological experts
- Advance drawdown of Lake Lillinonah in some cases is beneficial for downstream areas
- Shift staffing both at plants and at dispatch center
- Emergency generators and communication systems

Flooding Events

- March 6-7, 2011 Flood was in top three historical events at Stevenson Dam
- Shepaug and Stevenson anchored, analyzed for much higher flows than ever seen in the river basin
- Flood operation can be done without grid power

Closure

- Robust, conservative design results in high margins of safety
- Key issue is to anticipate sudden summer thunderstorms
- Hurricanes are part of design basis
- Loss of system load for extended period of time raises concerns on operations



Questions ?

Thank you ...