

Key Account Customer Meeting

ERCOT Emergency Alerts & Outage Communications



August 8, 2018

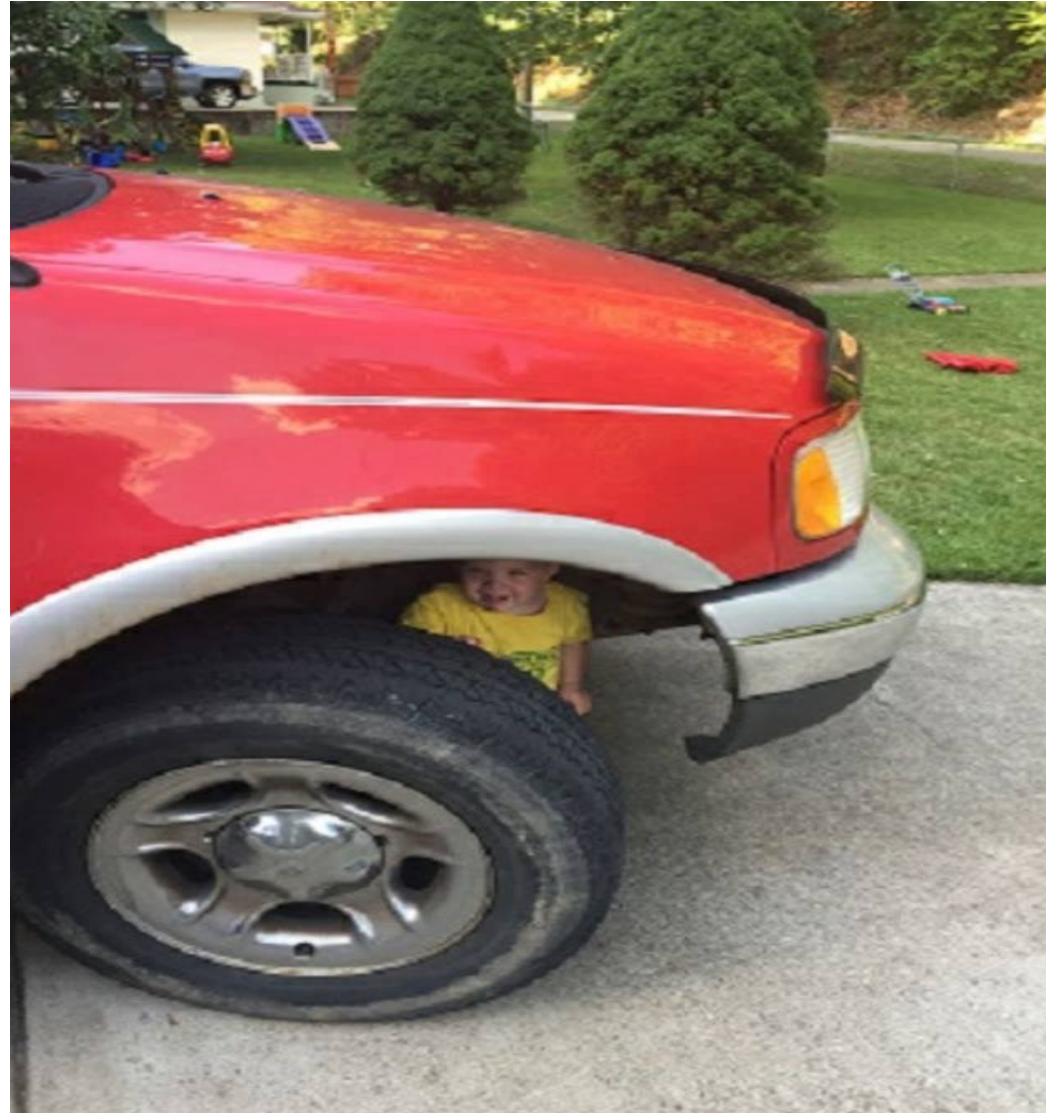
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Safety Moment

- Evacuation & muster areas
- Walk around your vehicle before you drive



Safety Moment



Agenda

- Energy emergency history on the Texas grid
- Outage communication protocols
- AE's System Control Center's role
- AE's Energy & Market Operation's role



Outage Communications



Outage Communications – “Blue Sky” Day

- **Report outages through the 1-888 Key Account hotline**
 - Manned by the Key Accounts Team during the day and 311 after hours.
 - Key Accounts may not know you’re out unless you report it through the hotline.
 - Check your breakers before you call. Meter numbers or pole numbers are helpful.
 - Provide a staffed phone number for call backs.
 - Hotline should only be used to report active outages.
- **Text alerts**
 - Sign up for outage text alerts.
 - The text will have the same information and estimated times of restoration as your Key Account Manager.

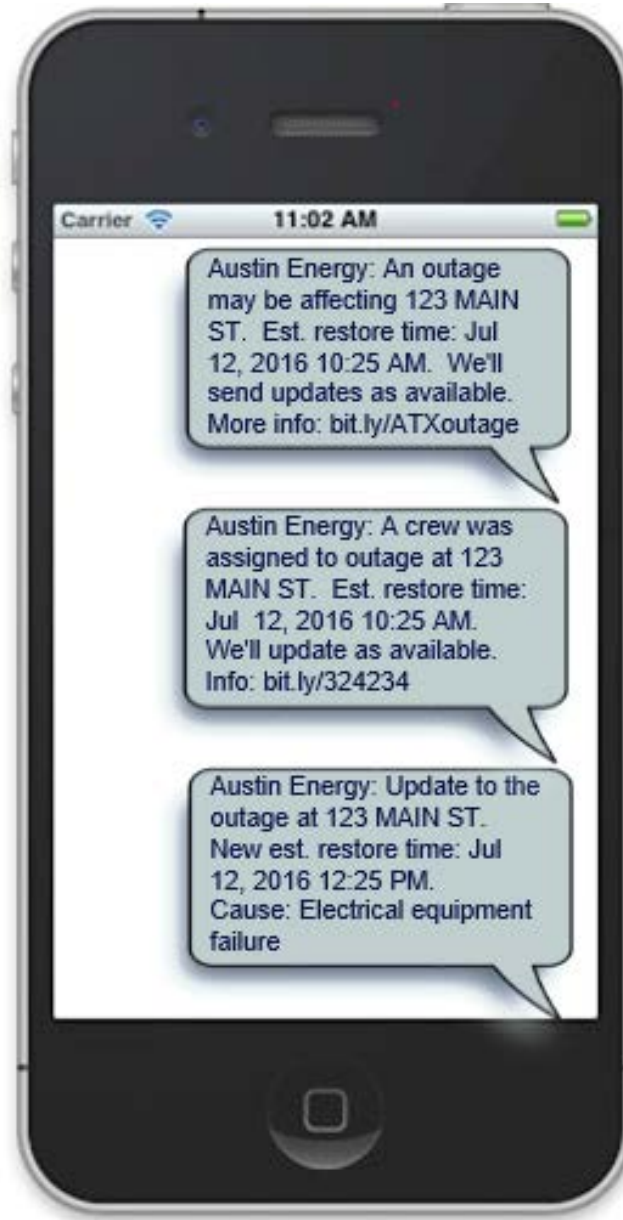


Text Alerts

- **EXAMPLE:**

Blue sky, single account/premise

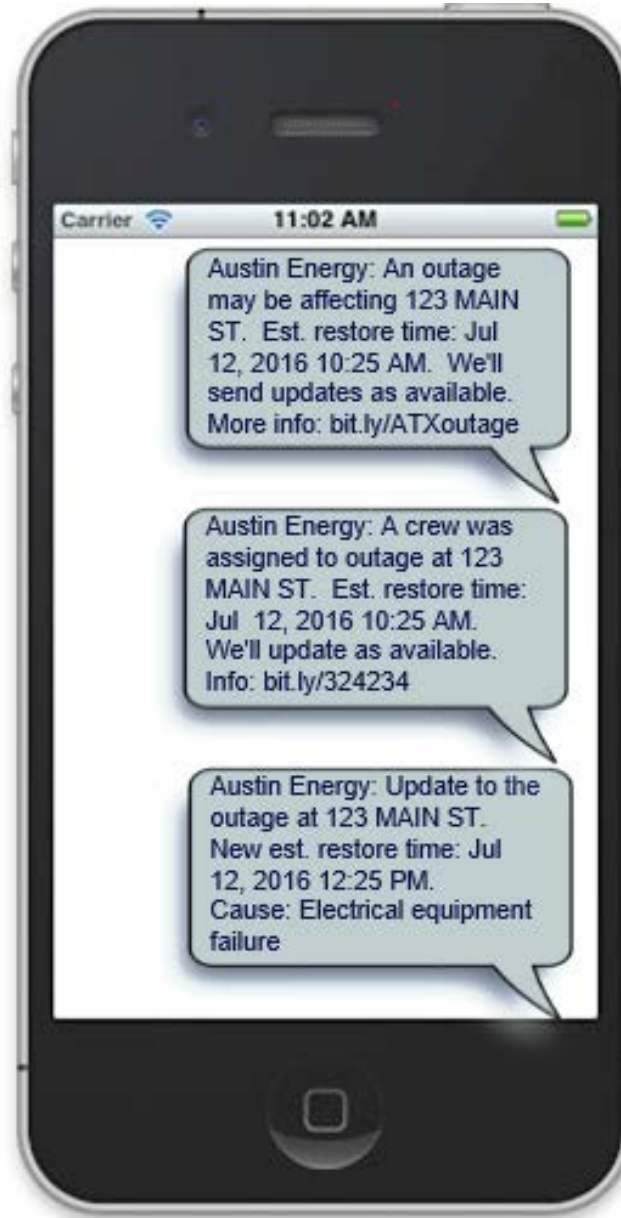
Customer requests status once during the outage



1. Proactive SMS is sent to alert you that your premise may be affected by an outage
2. You are notified when a crew has been dispatched
3. You are notified the cause of the outage and Estimated Time of Restoration (ETR)



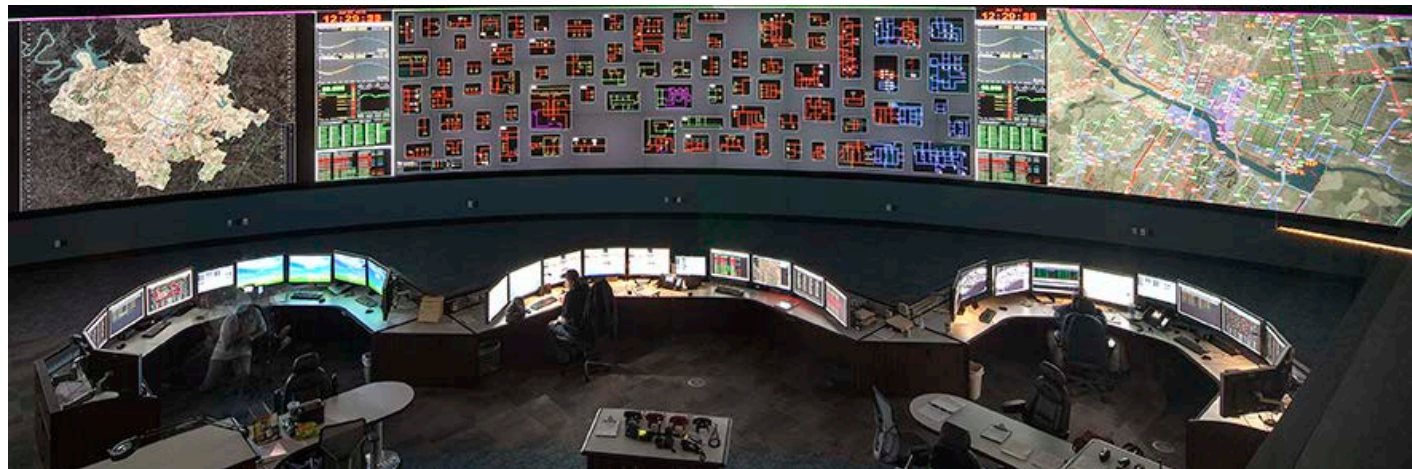
Text Alerts



4. You can initiate a two-way SMS info request for outage status (STAT)
5. Receive notification that power has been restored

Large Storm Events

- Austin Energy uses the Incident Command structure similar to police and other first responders
- Key Accounts response
 - Two 12-hour rotating shifts
 - Newsflash emails to customers regarding restoration progress
 - Prioritize Key Accounts and Critical Loads



Critical Loads

- Facilities necessary to protect public health and safety
- Tier 1 – Downtown network, hospitals, control centers, 911, ABIA, water/wastewater plants, communication infrastructure for first responders and utility communications
- Tier 2 – Nursing homes, ambulatory health care, blood and tissue centers
- Tier 3 – Water/Wastewater pumping stations, psychiatric hospital, detention facilities

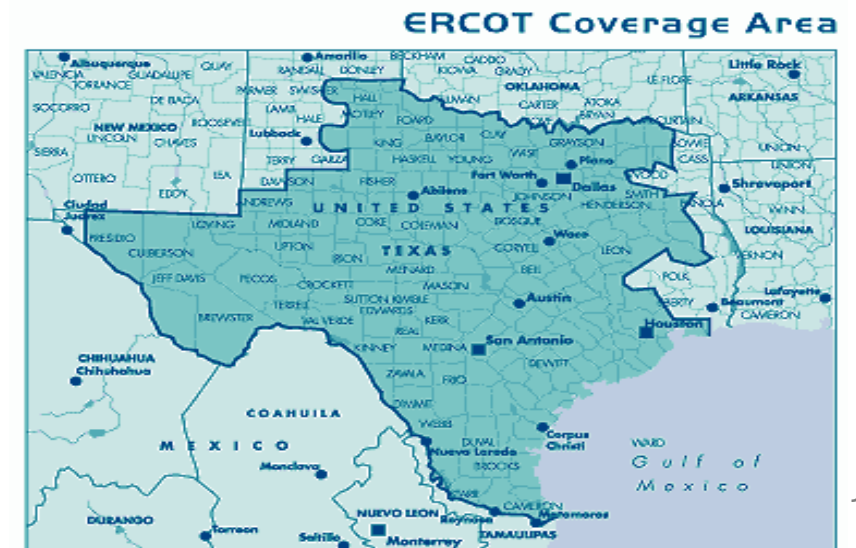


ERCOT Communications

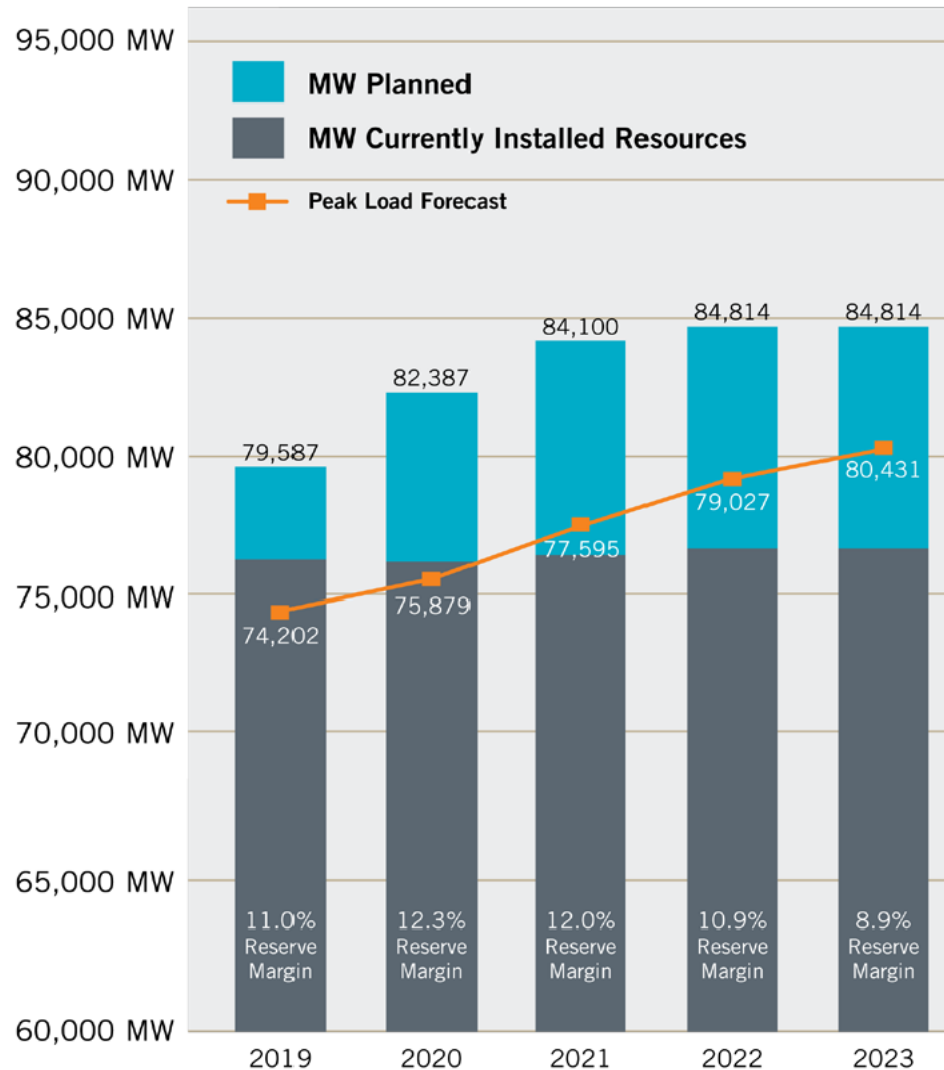


ERCOT (Electric Reliability Council of Texas)

- Manages 90% of the State's electrical load with over 600 generators
- Focused on Reliability and Markets through next day and real time analysis
- Balances Generation and Demand (schedules energy to follow demand)
- Austin Energy is ~ 4% of ERCOT load.
- Settles monetary transactions for energy



ERCOT Reserve Margin



- Low ERCOT Reserve Margin in 2018 due to recent retirement of over 4,000 MW of coal generation (March 7%) (April 11%)
- Hot weather has been setting all-time peak demand this summer. AE Peak 7/23/2018
- New generation coming online in the next two years will increase the reserve margin
- Planning reserve margins can shift quickly as the ERCOT market experiences cycles of new investments, retirement of aging resources, and growing demand for power



ERCOT Energy Emergency History

- Although blackout events have occurred in the Northeast, ERCOT has never experienced a blackout
- Rotating outages occurred ERCOT in February 2011



ERCOT Energy Emergency Alerts (EEA)

- EEA communications are based on energy reserves and/or system frequency.
- Utilities respond to these alerts in various ways, but AE Incident Command is proactive.
- Incident Command is initiated when ERCOT issues EEA level 1, but depending on circumstance it may be initiated earlier.



ERCOT EEA Levels

EEA Level	Trigger	ERCOT Action	AE Action
1 POWER WATCH - Conservation Needed	Reserves < 2,300 MW for 30 min	Use all available generation, deploy first level of load management programs and reserves (ERS 30)	Activate Incident Command
2 POWER WARNING A - Conservation Critical	Frequency cannot be maintained above 59.91 Hz or PRC <1,750 MW for 30 min	Deploy demand response resources: Load resources under contract and ERS 10	Newsflash and media notified
3 POWER WARNING B - High Risk of Rotating Outages	Frequency cannot be maintained above 59.91 Hz or PRC cannot be maintained >1,375 MW	Same as above	Same as above
3 POWER EMERGENCY - Rotating Outages in Progress	Frequency cannot be maintained above 59.91 Hz or PRC <1,000 MW for 30 min	Instruct transmission operators to implement rotating outages	Implement Firm Load Shed



Why rotating outages occur

- ERCOT may require each Utility to have rotating outages to prevent degradation of the electric system. It is a last resort measure used to avoid a total blackout of the power system.
- Usually occurs when demand exceeds the power supply or when there is inadequate transmission infrastructure to deliver sufficient power to areas of need.



Rotating outage feeders

- Feeders with Tier 1 and Tier 2 customers are protected
- Austin Energy currently has 90 feeders identified for rotating outages. The rotation of the feeders is random and rotates approximately every 10 minutes.
- Austin Energy will shed its portion (4%) of the total ERCOT request and continue to rotate until directed
- AE expanded the list of feeders that can be used for rotating outages after the 2011 event

Example:

ERCOT requests AE shed our share of 1,000 MW. Austin Energy will shed 4%, 40 MW, and must comply within 30 minutes.



Underfrequency Feeders

- Consists of feeders that do not have Tier 1 loads and are not subject to Rotating Outages
- Designed to be automatically dropped off-line if the ERCOT system frequency drops to pre-defined levels to prevent uncontrolled cascading of the ERCOT system.
- Three pre-defined levels dropping a total of 25% of AE load.

	Frequency	Portion of AE Load
Tier 3	59.3 Hz	5% of AE system load
Tier2, Tier3	58.9 Hz	Additional 10% (total = 15%)
Tier2, Tier3	58.5 HZ	Additional 10% (total = 25%)



Black Start

- The process/plan initiated when there is a total or partial shutdown in the ERCOT region.
- ERCOT approved Black Start Plan
- Goal = create stability while restoring customer load. (May take days)
- ERCOT coordinates the interconnection of transmission systems.

Note: Black Start has not occurred at Austin Energy, however Austin Energy reviews and exercises the Black Start Plan annually

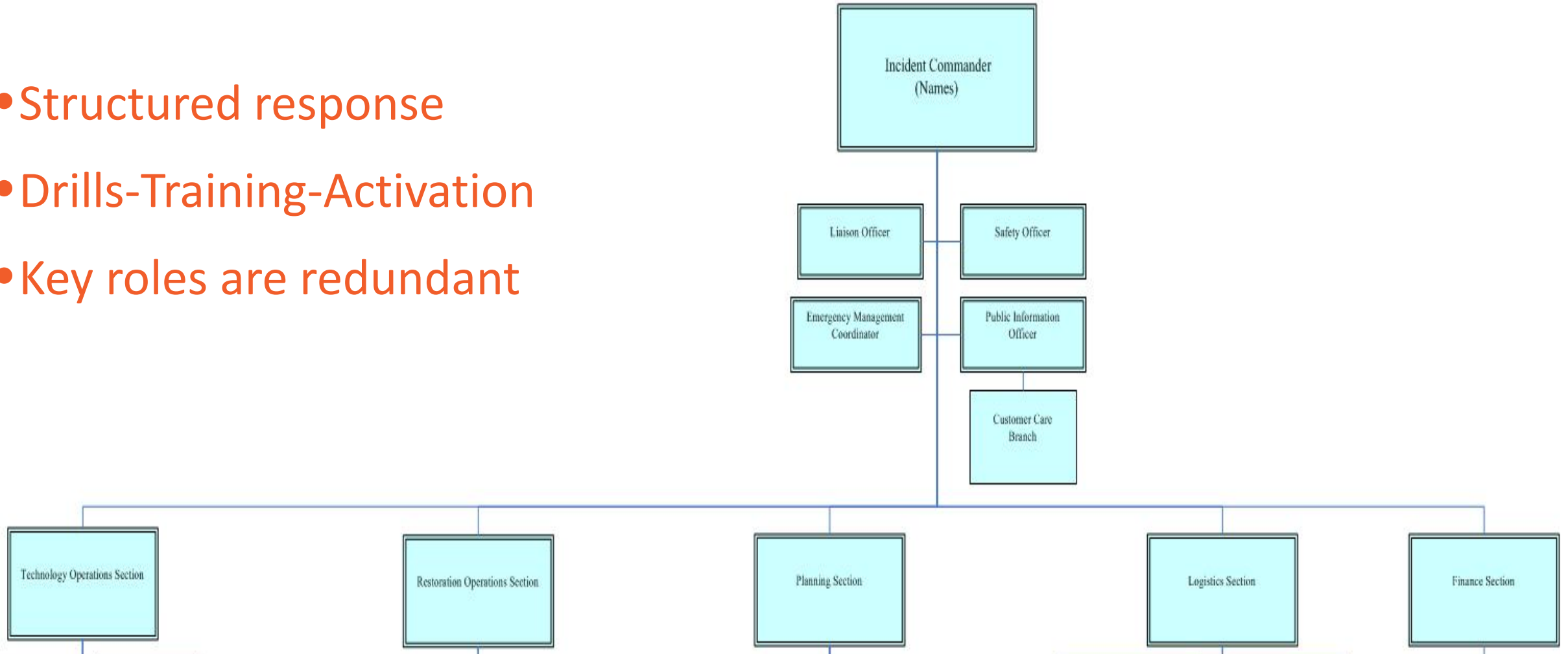


Key Roles for Incident Command



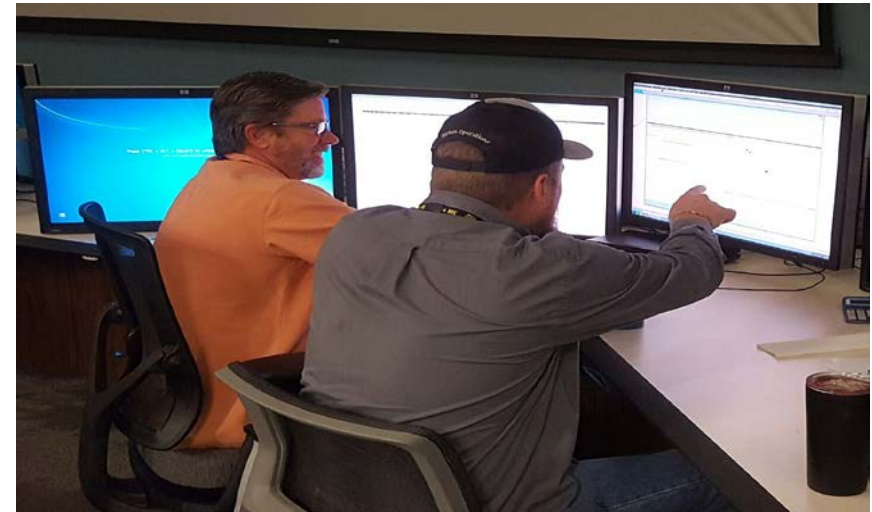
Incident Command

- Structured response
- Drills-Training-Activation
- Key roles are redundant



AE System Operations

- 20 North American Electric Reliability Corporation (NERC) certified System Operators
 - EEA drills are conducted with all key Incident Command personnel
 - Annual EEA simulation training. Black Start training coordinated through ERCOT.
 - Annual updates to the Critical Load customer list
- Primary and back up Control Centers
- Distribution Training Simulation



Generation Desk During ERCOT Emergency

- Forward ERCOT notifications to AE owned and contracted resources
- Verify unit status and emergency operating limits of all generators
- Contact gas pipelines and monitor fuel supply
- Dispatch any offline but available resources upon ERCOT instruction
- Deploy ERS 30 and 10 upon ERCOT instruction



Austin Energy Demand Response Programs

- 32 MW Load Coop
 - 145 accounts added to Load Coop this year for a total of 498
- 40 MW with ~20,000 one way Power Partner thermostats
- 27 MW with over 23,000 Bring Your Own Thermostats for residential and small commercial
- 16 MW of ERS last fiscal year



Notifications during ERCOT emergencies

- **Energy Emergency Alerts**

- Newsflash email updates beginning with EEA Level 2 (Warning-Conservation Critical)
- Press communications

- **Rotating Outages**

- Newsflash email updates

- **Black Start**

- Newsflash email updates may be very delayed in going out



What is your safety and communication plan?

- Things to consider

- Traffic issues in rotating outage or black start situations
- Gas pumps in impacted areas won't work
- Cell communications may not function
- Status of children at school or daycare
- May be difficult to get backup generator fuel replenished

- Communication plan to your employees, tenants, customers, students/parents





**Customer Driven.
Community Focused.**





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