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 (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
- 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

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

<table>
<thead>
<tr>
<th>Tier 3</th>
<th>Frequency</th>
<th>Portion of AE Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 2, Tier 3</td>
<td>59.3 Hz</td>
<td>5% of AE system load</td>
</tr>
<tr>
<td>Tier 2, Tier 3</td>
<td>58.9 Hz</td>
<td>Additional 10% (total = 15%)</td>
</tr>
<tr>
<td>Tier 2, Tier 3</td>
<td>58.5 HZ</td>
<td>Additional 10% (total = 25%)</td>
</tr>
</tbody>
</table>
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.