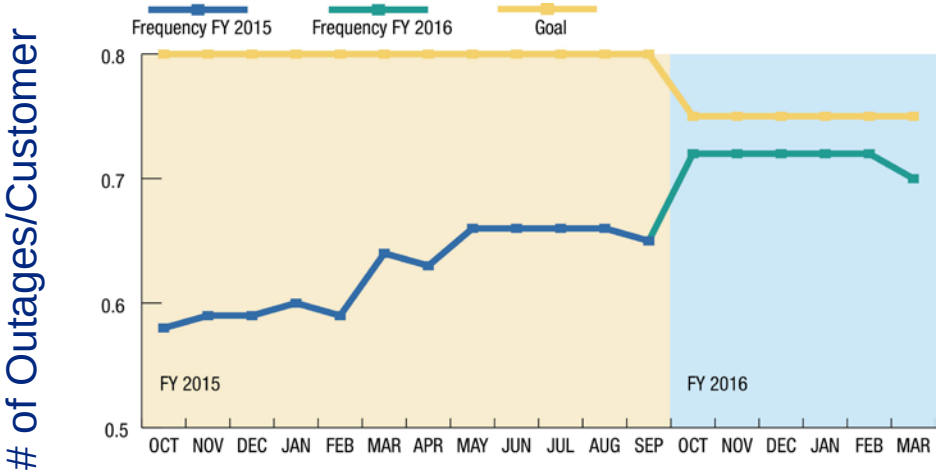
Storm Response and Outage Restoration Process

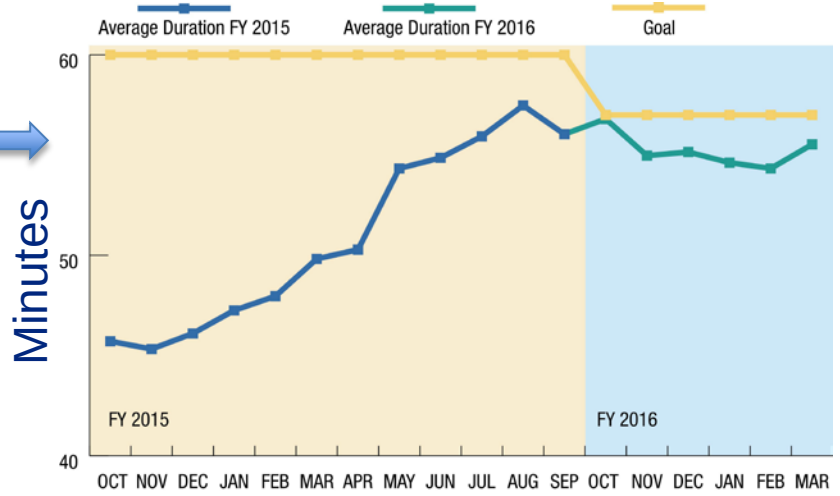
Austin Energy Utility Oversight Committee
May 26, 2016

Distribution System Reliability



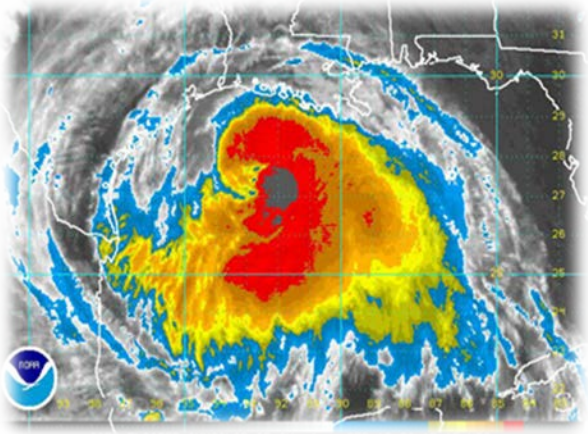
SAIFI: System Average Interruption Frequency Index

SAIDI: System Average Interruption Duration Index

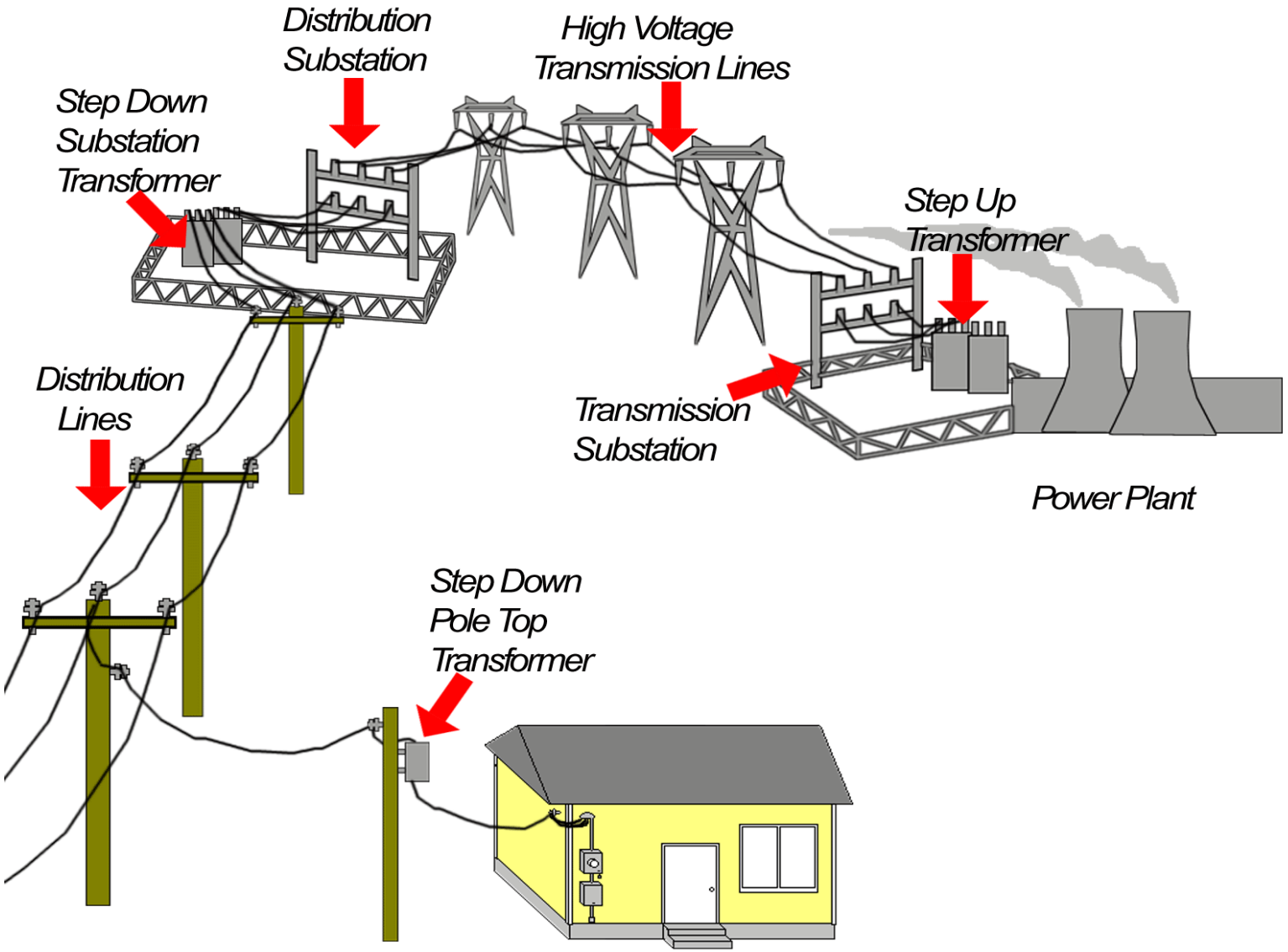


Consistently in the top quartile for reliability when compared to other utilities

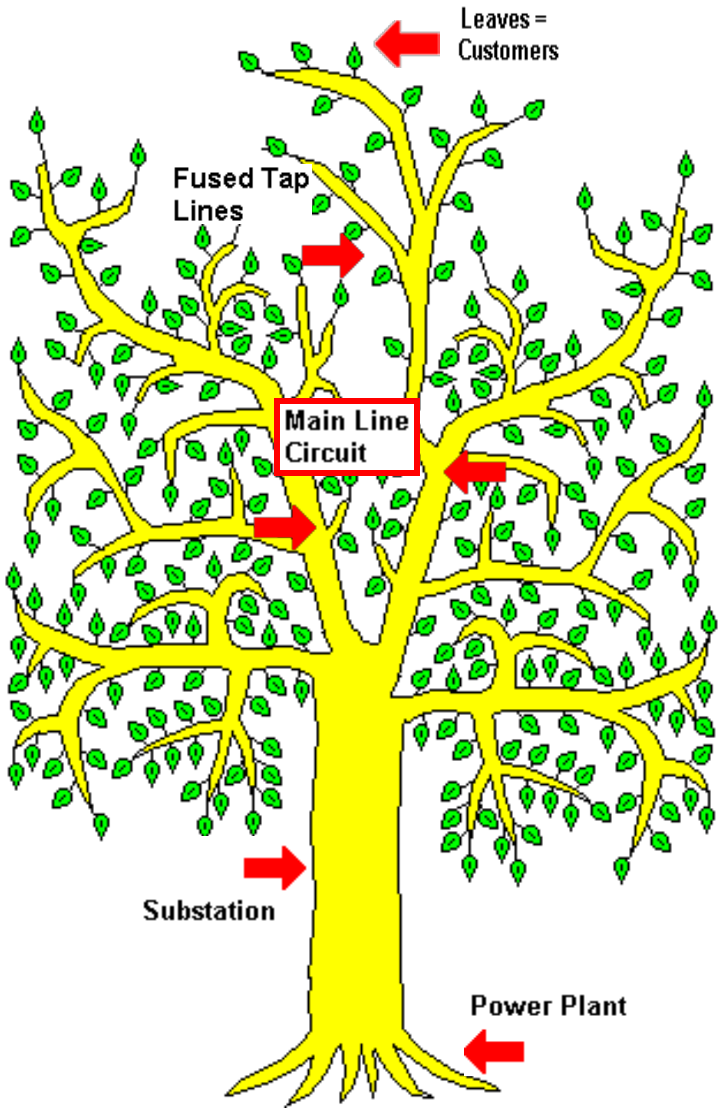
Restoration Opportunities



Transmission & Distribution System



Tree Analogy: Normal Operation



This tree is analogous of a substation and distribution feeders that serve customers

Leaves = Houses or Customers

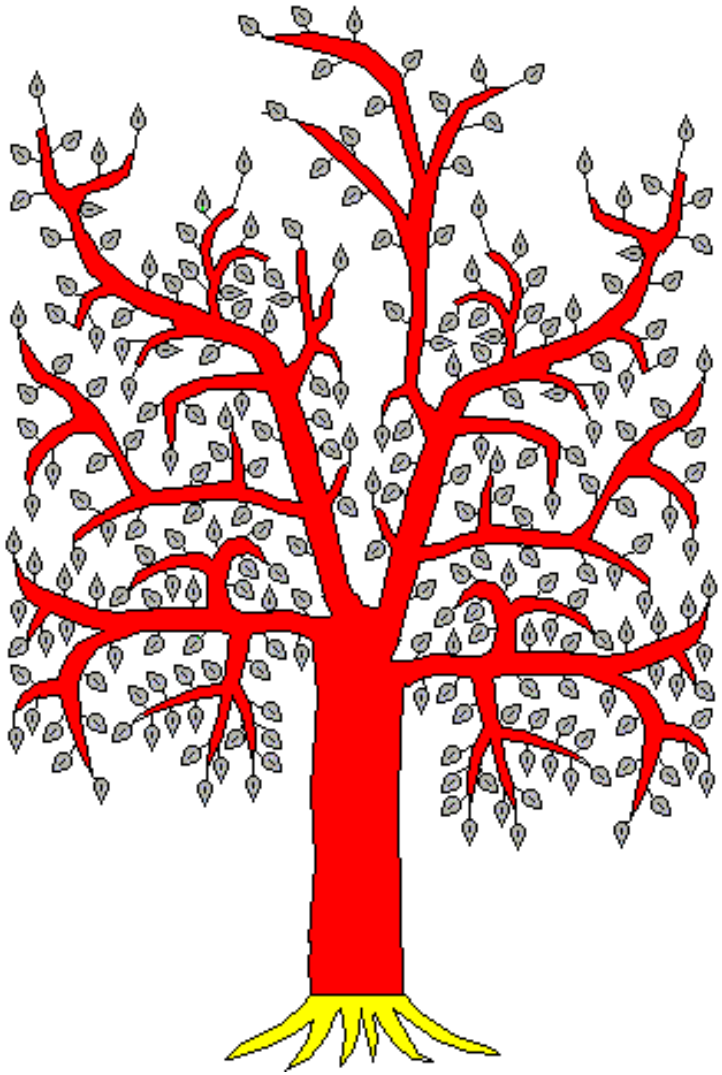
Tree Trunk = Substation

Roots = Power Plants or Power Source

Major Limbs = Distribution Feeder or Main Line Circuit

Smaller Limbs = Tap Lines or Transformers

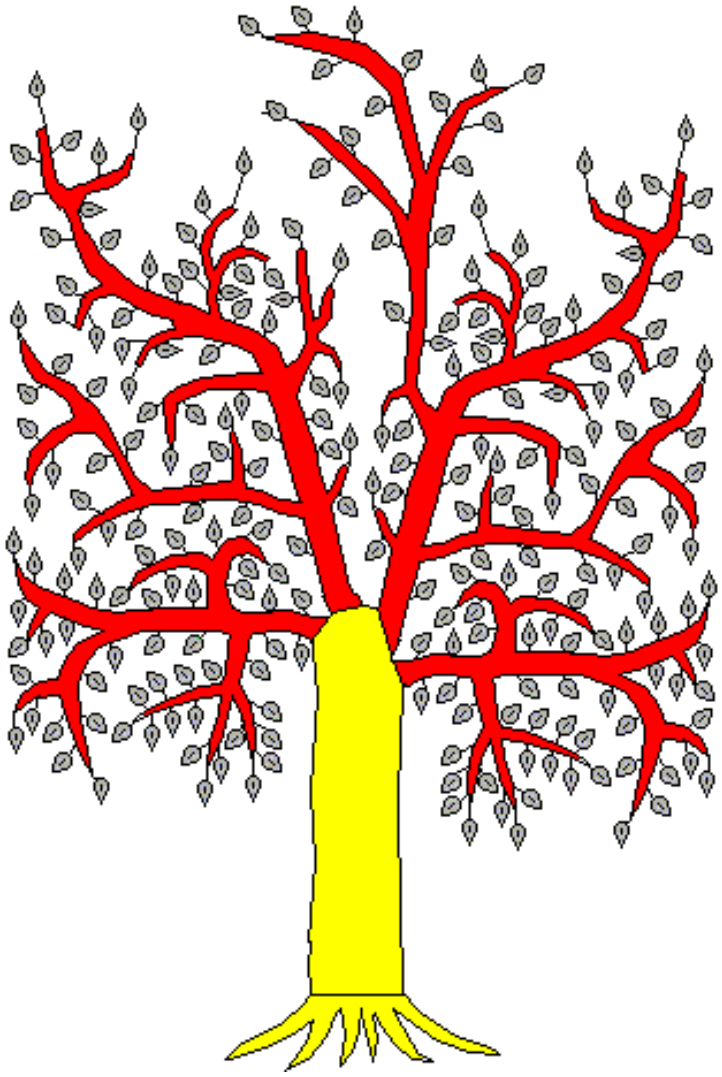
Loss of a Substation



This represents the distribution system when a substation loses power

The gray leaves represent customers are without power

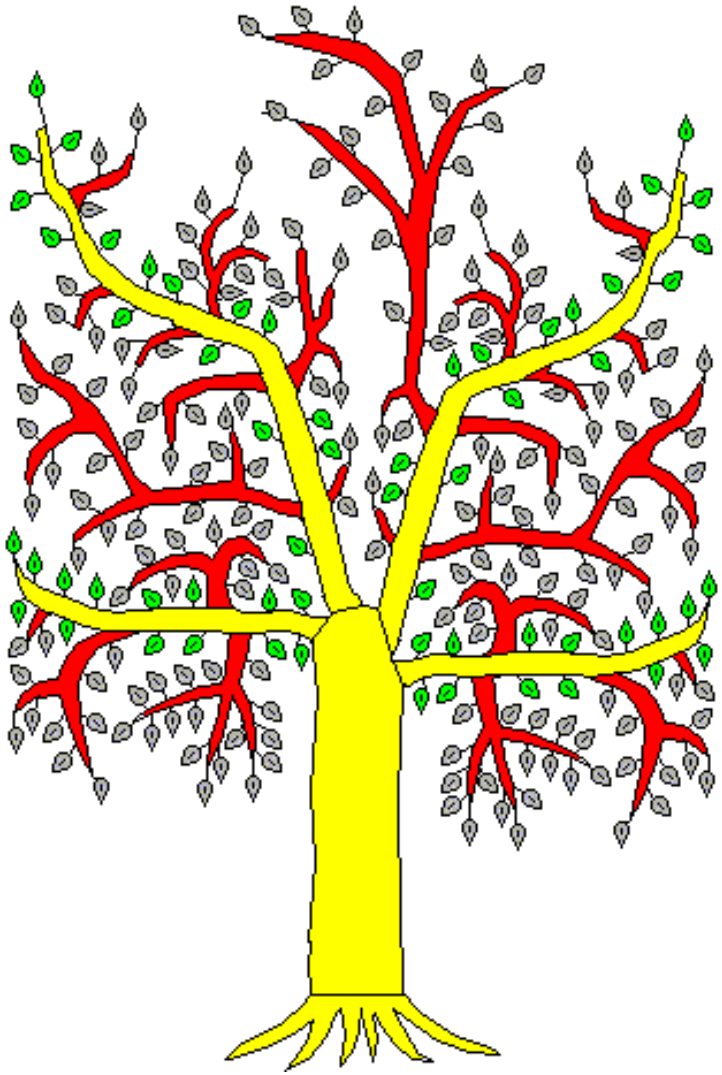
Restoration Begins



During restoration, we start by restoring the largest element out or closest to the power source

In this case … the Substation

Feeders Restored

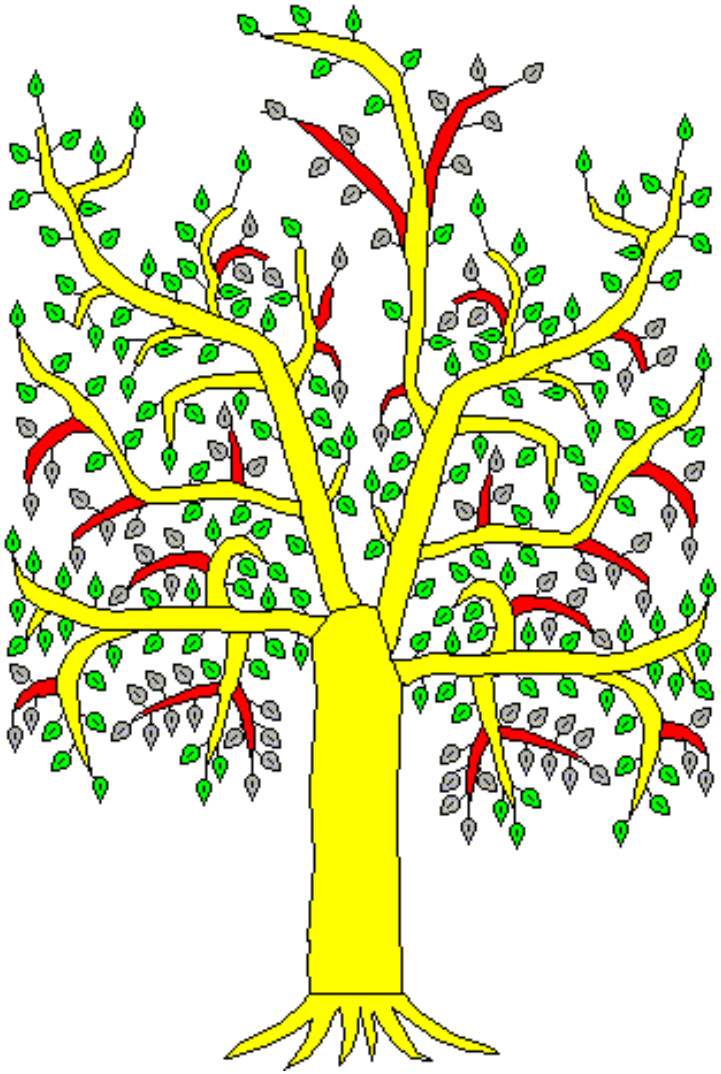


After restoring the substation, we work our way to each distribution feeder

In this case only customer served directly from mainline transformers are restored

Customers served from tap lines are still out

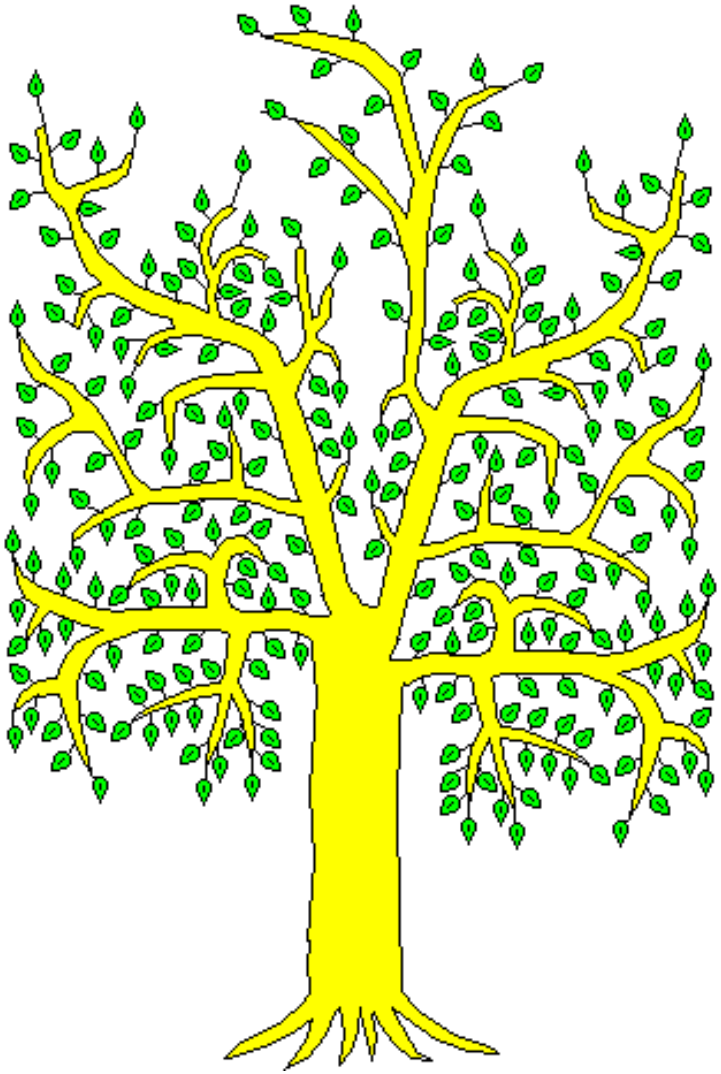
Tap Lines Restored



After restoring the distribution feeders, crews restore fused tap lines that serve large numbers of customers

Notice that the customers fed from smaller tap lines and transformers are still out

Full Restoration



After restoring the main taps, crews restore secondary tap lines, transformers, and individual customers restoring power to all customers

Restoration Objectives

- Preparedness
- Personnel and Public Safety
- Communication (Internal & External)
- Damage Assessment and Situational Awareness
- Prioritize & Assign Restoration Activities/Crews
  1. System Stability
  2. Life Safety, Public Safety, Medical Dependent Customers
  3. Largest # of Customers
  4. Longest Customers Out
- Post Event Analysis and Lessons Learned
- Implement Continuous Improvement

Preparedness

- Austin Energy has dedicated internal and contract crews and leading operational technology to respond 24x7 to normal and emergency outages
- National Incident Management System to manage emergency situations in a uniform and systematic manner
  - Fully staffed Incident Command and Emergency Management System
  - Periodic incident drilling and table top exercises
  - Part of the City's Emergency Operations
- As needed, Mutual Assistance with other utilities to ensure safe and timely restoration of customers

Making Restoration Safer

Remote communication and control of Transmission & Distribution assets

Call Center Communication

	Utility Contact Center	311Citywide Information Center
Storm Prep	• Monitor storm, send notice to "Call Center First Responder" team members	• Monitor storm, communicate with EOM, if necessary
Storm Response	• Take customer calls, provide storm status, answer related questions • Customer can request call-back to confirm restoration • Key Accounts are contacted If call volume is high; • Send calls to 311 • Utilize 21st Century call service	After normal operating hours; • Take customer calls, provide storm status, answer related questions EOC Activation; • Enter service requests for City Departments, such as flood locations, debris on street, street closures, barricades, etc.
Close-Out	• Call customers back confirming restoration	• Call customers back, compile reports

All customer calls tied to AE-Call which is tied to the Outage Management System

Grid Modernization & Restoration

- Today

Outages are largely reported through customer calls & web (512.322.9100)

  - Fault location identified by ADMS, some field assessments required
  - Power back is confirmed through automated call backs
  - Outage & distribution management systems are viewable in the control center

- Programs Under Way

  - Outages identified through communicating devices
  - Piloting fault location & automatic switching/restoration of customers.
  - Piloting UAVs to perform visual assessments
  - Customers receive proactive communications from AE
  - Crews have mobile tools to view electric system & work management in the field

Questions?

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