

Texas RE Extreme Events Resiliency Workshop

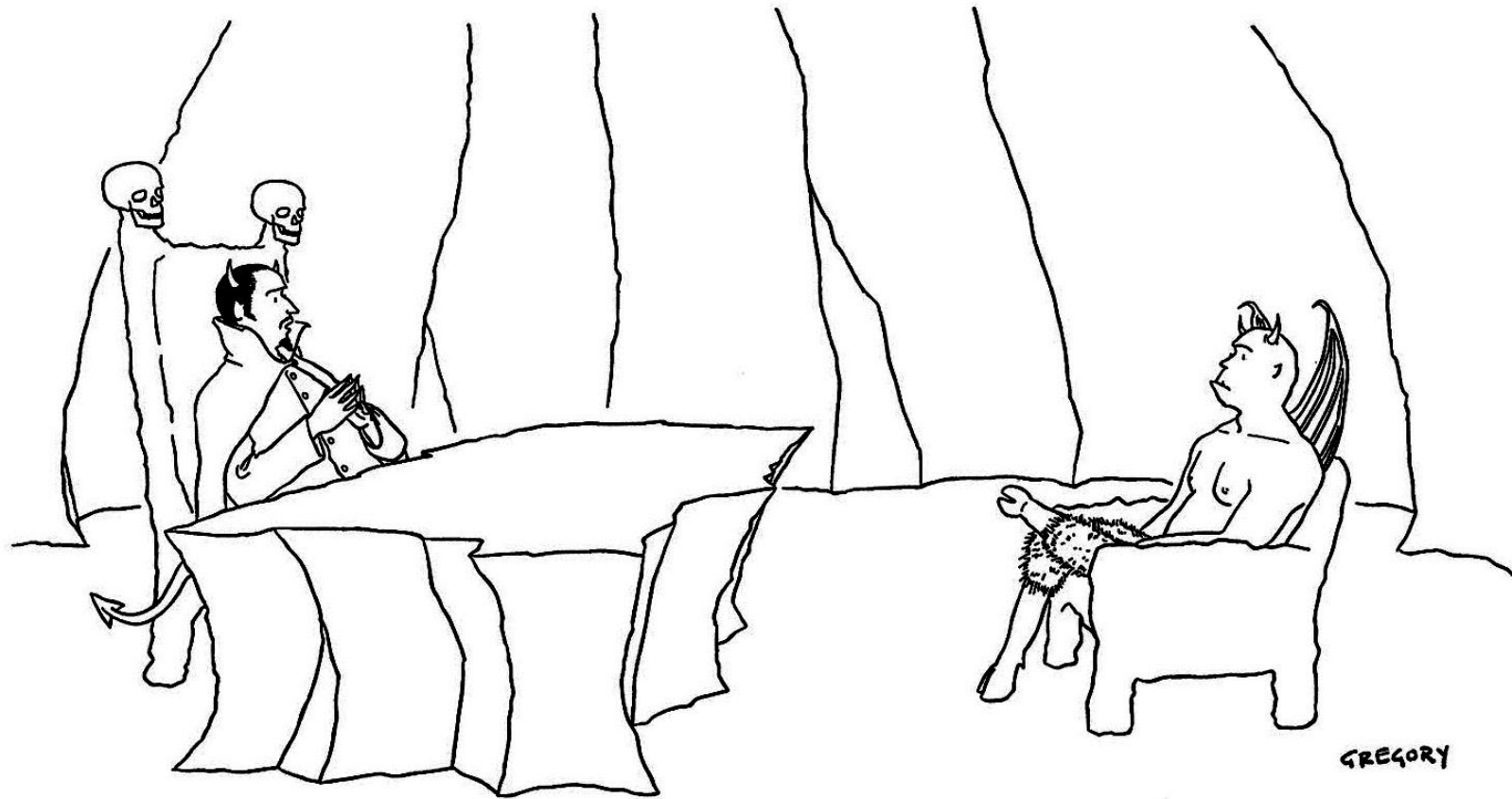
Julie C. Parsley | Chief Executive Officer
Pedernales Electric Cooperative, Inc.



September 20, 2022

Overview

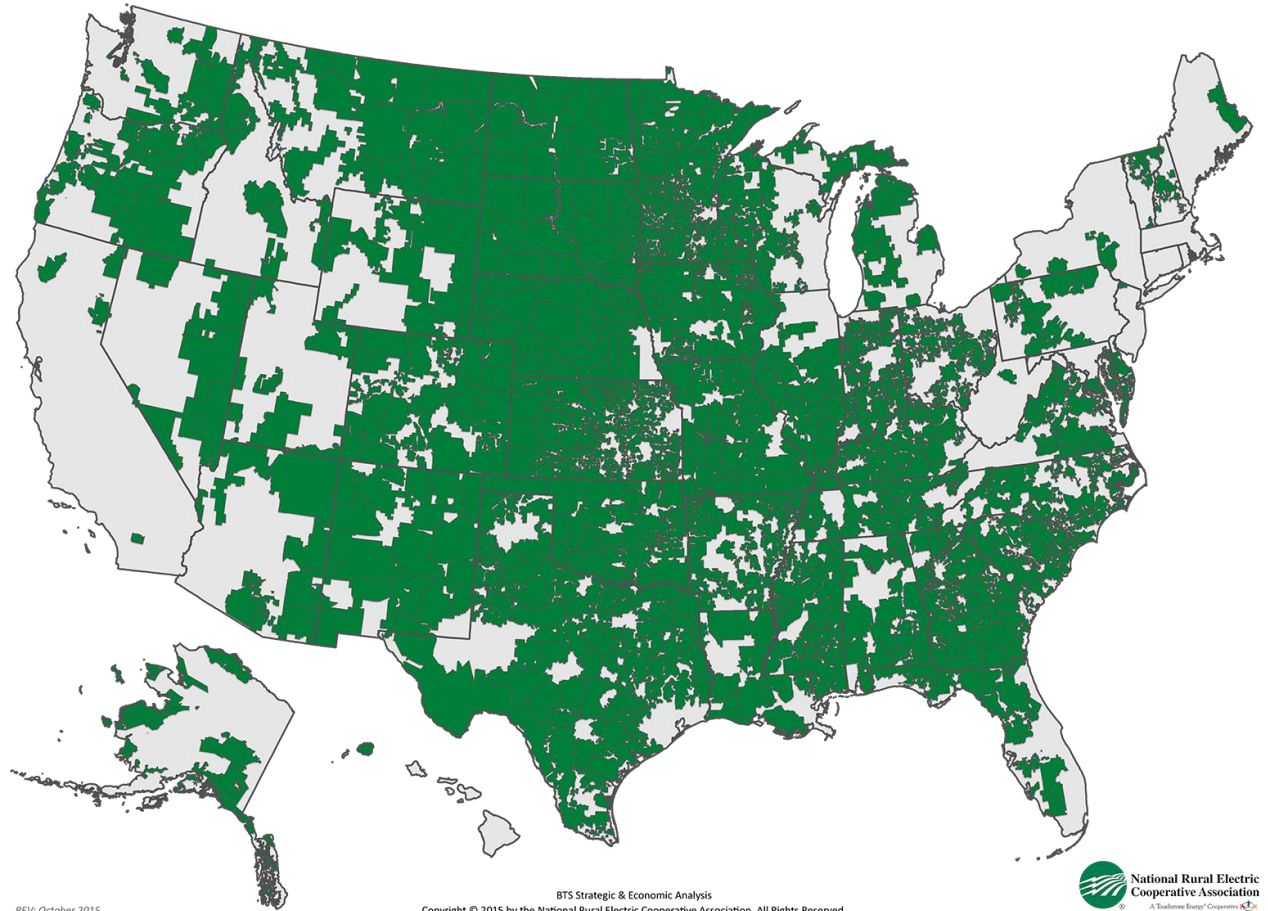
- I. Who (and What) Is Pedernales Electric Cooperative (PEC)?
- II. How Is PEC Governed?
- III. The ERCOT Market
- IV. PEC's Actions to Increase Resiliency



*“I need someone well versed in the art of torture—
do you know PowerPoint?”*

National Electric Cooperative Network

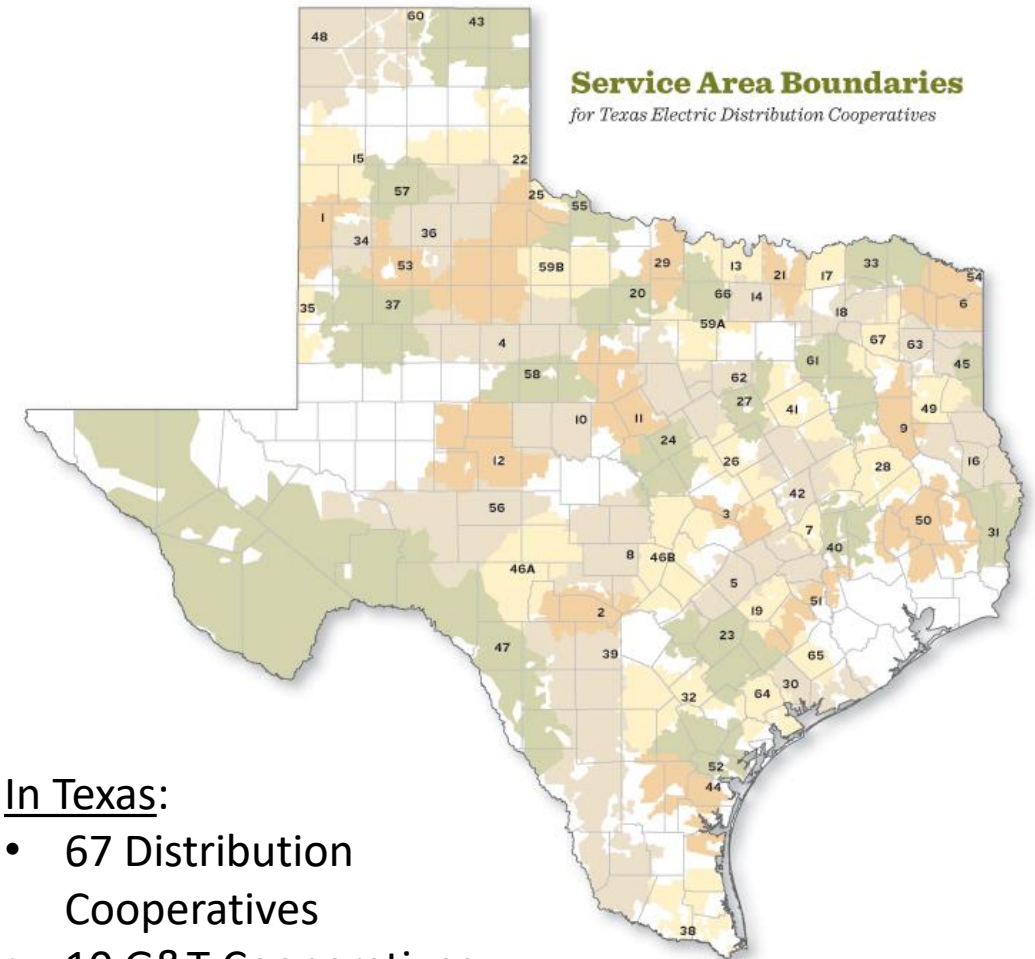
- Electric Cooperatives are not-for-profit entities owned by their customers (members)
 - Customer owned and governed
 - Primarily rural in nature
 - Power 56% of the nations' land mass
 - More than 900 electric cooperatives nationally
- Serves 42 million Americans in 47 states



Texas Electric Cooperatives

Distribution Cooperatives, like PEC, are the foundation of the electric cooperative network. They were built by and provide electric service to, the co-op members

Generation & Transmission Cooperatives (G&T) provide wholesale power to distribution co-ops through the G&T's electric generation facilities or purchased power. The G&T's customers are its distribution co-ops, and the distribution co-ops serve their end users (members)

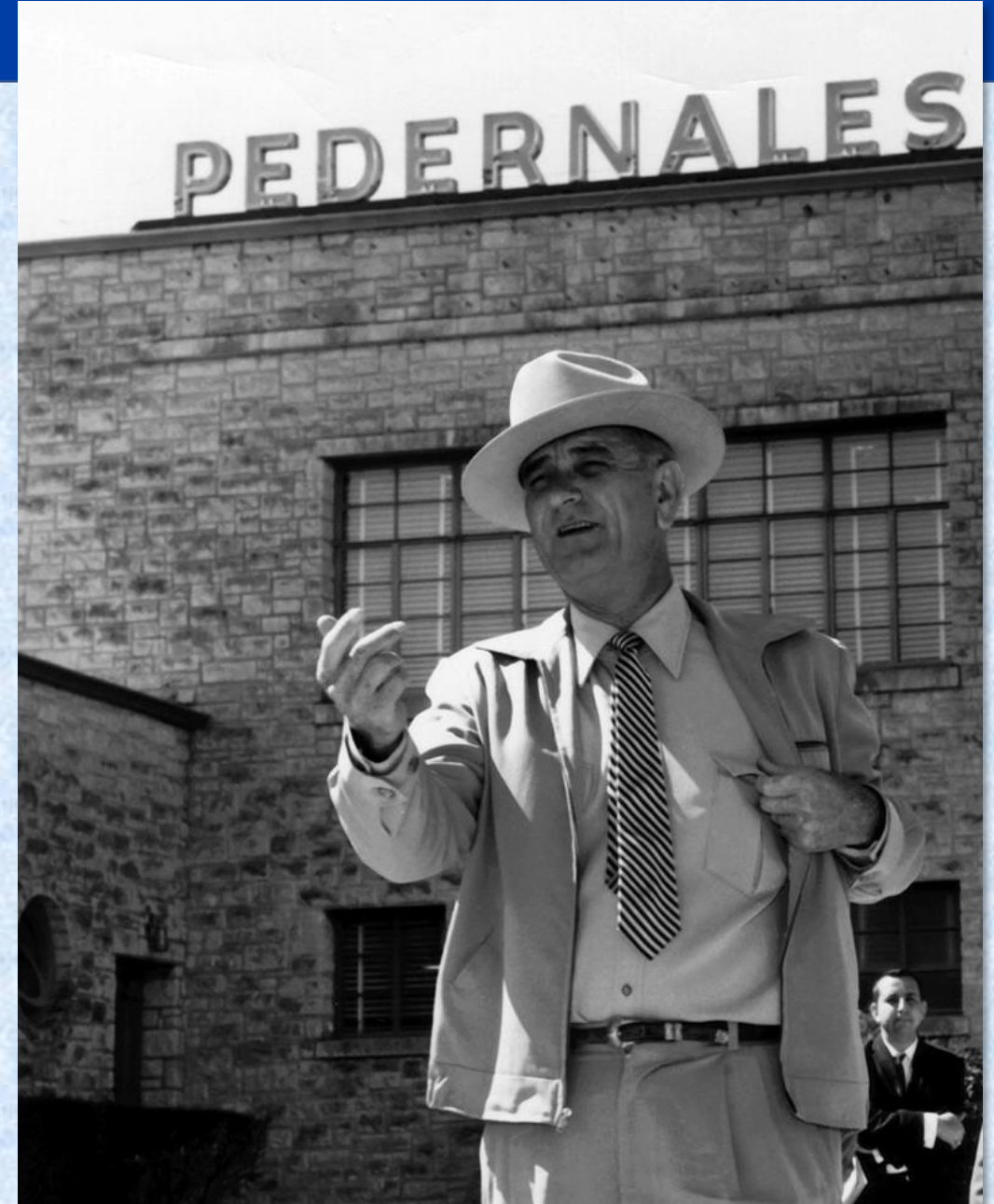


In Texas:

- 67 Distribution Cooperatives
- 10 G&T Cooperatives

How did PEC come to be?

- President Roosevelt established the Rural Electrification Association (REA) in 1935
- A young Lyndon B. Johnson ran for Congress stating that he would electrify rural Central Texas
- LBJ won, and he lobbied FDR for REA funds, even though the PEC area did not meet the 3-meters-per-mile REA requirement
- REA eventually awarded PEC a \$1.332 million federal loan for infrastructure



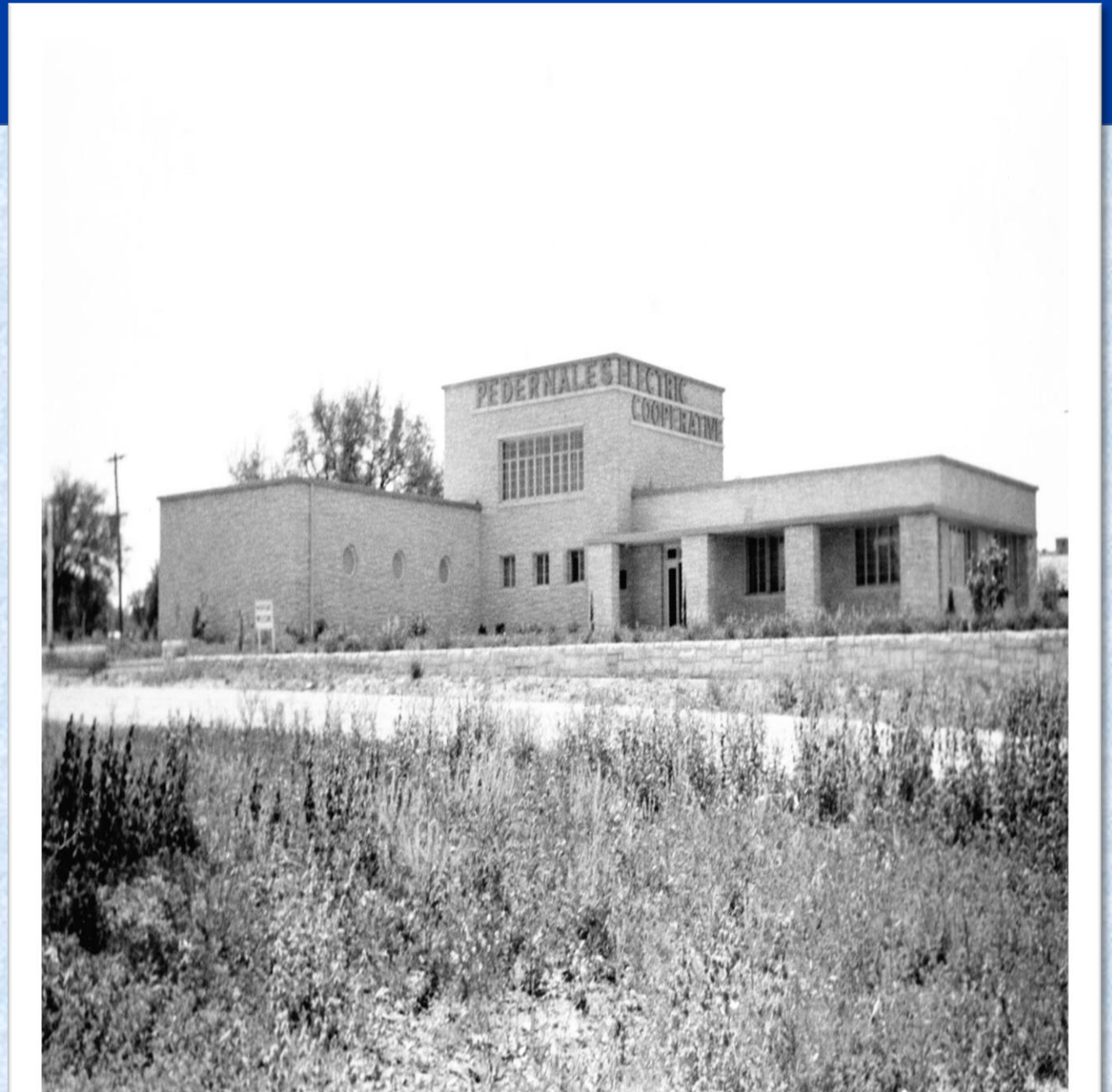
PEC History

- Local farmers and ranchers paid \$5.00 for each meter as a down payment to get electric service
- PEC's first lines were electrified in 1939 in Burnet County
- Initially built 1,800 miles of lines that served 3,000 families and ranches



PEC History

- PEC's headquarters was built in Johnson City in 1940 by Public Works Administration (PWA)
- Availability of electricity caused a population growth boom in the Hill Country

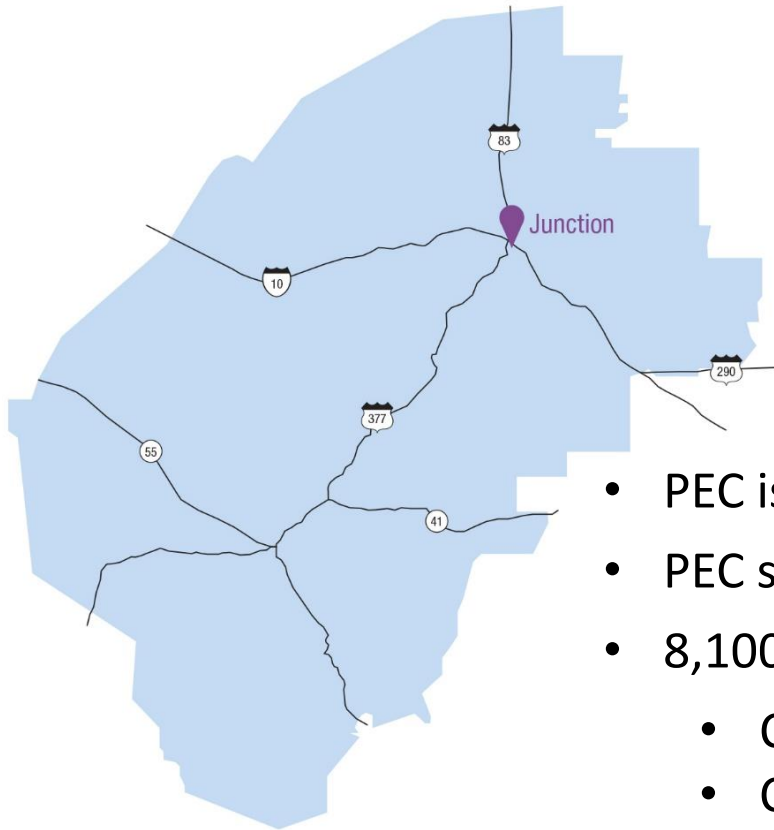


PEC Today

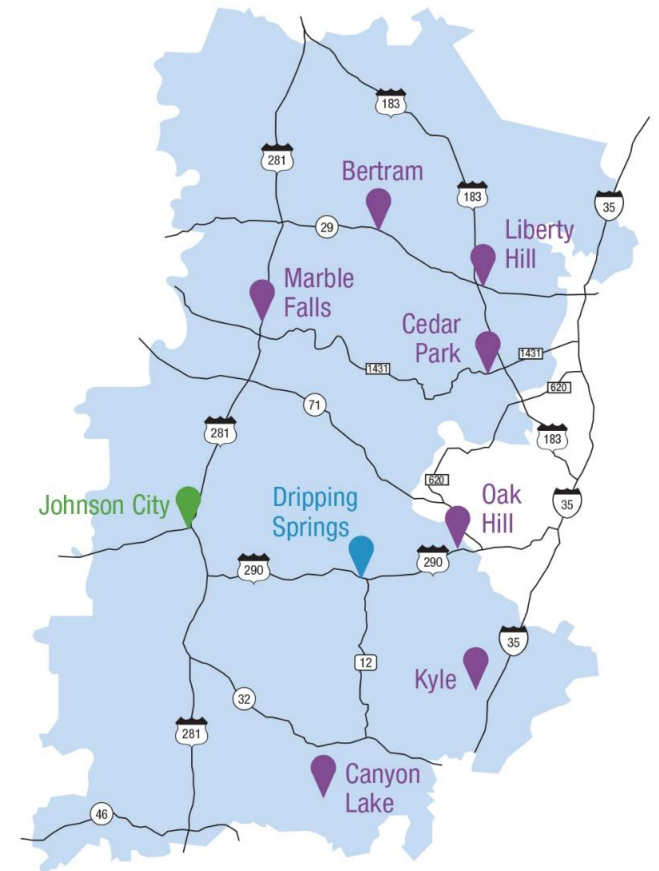
And today, PEC's headquarters remains in Johnson City, and PEC employs almost 900 people across its service territory



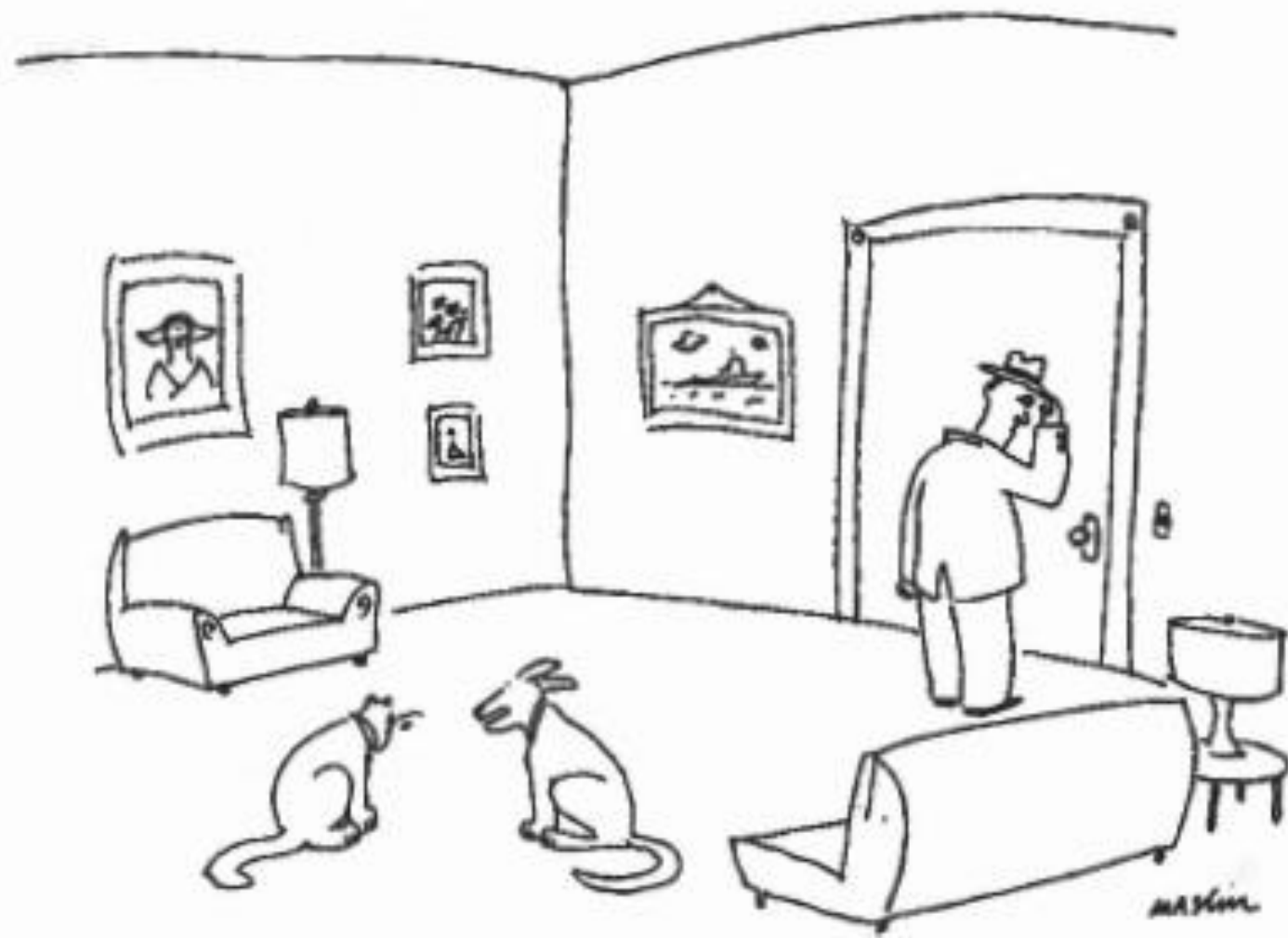
PEC Today



- PEC is the largest distribution co-op in the nation
- PEC serves almost 1 million Central Texans
- 8,100 square miles of service territory
 - Counties served: 24 (in whole or part)
 - Cities served: 47 (in whole or part)
- 49 minutes average SAIDI
- 24,208 miles of line



How Is PEC Governed?



"When he leaves, I'm in charge."

PEC Governance

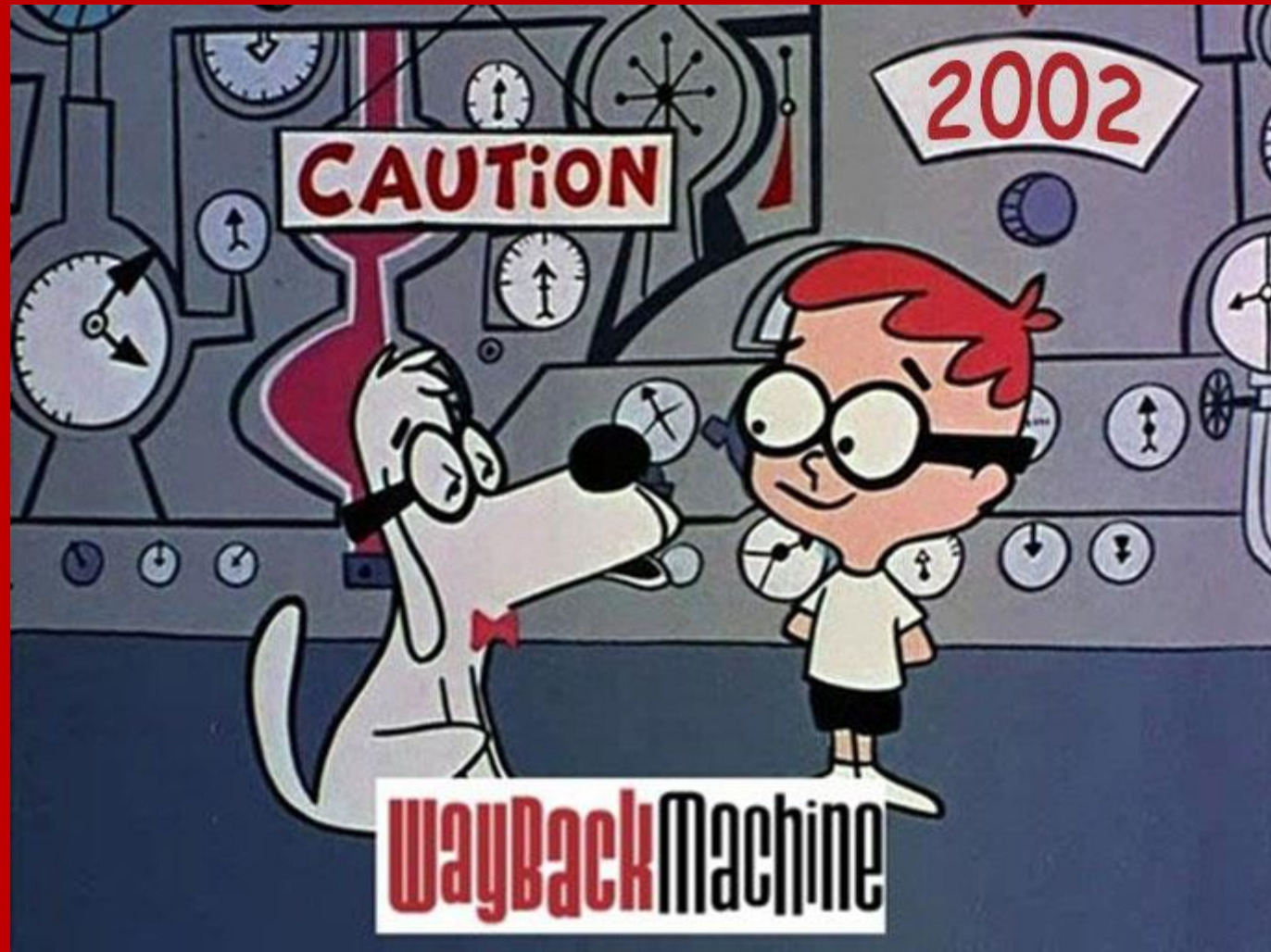
- Electric cooperatives are democratically governed by a board of directors elected by and from the membership
- The elected board sets rates, adopts the co-op's tariff, and sets policy
- Although not rate regulated by the PUC, PEC has voluntarily adopted, and follows policies and procedures in line with, PUC rules



PEC Governance

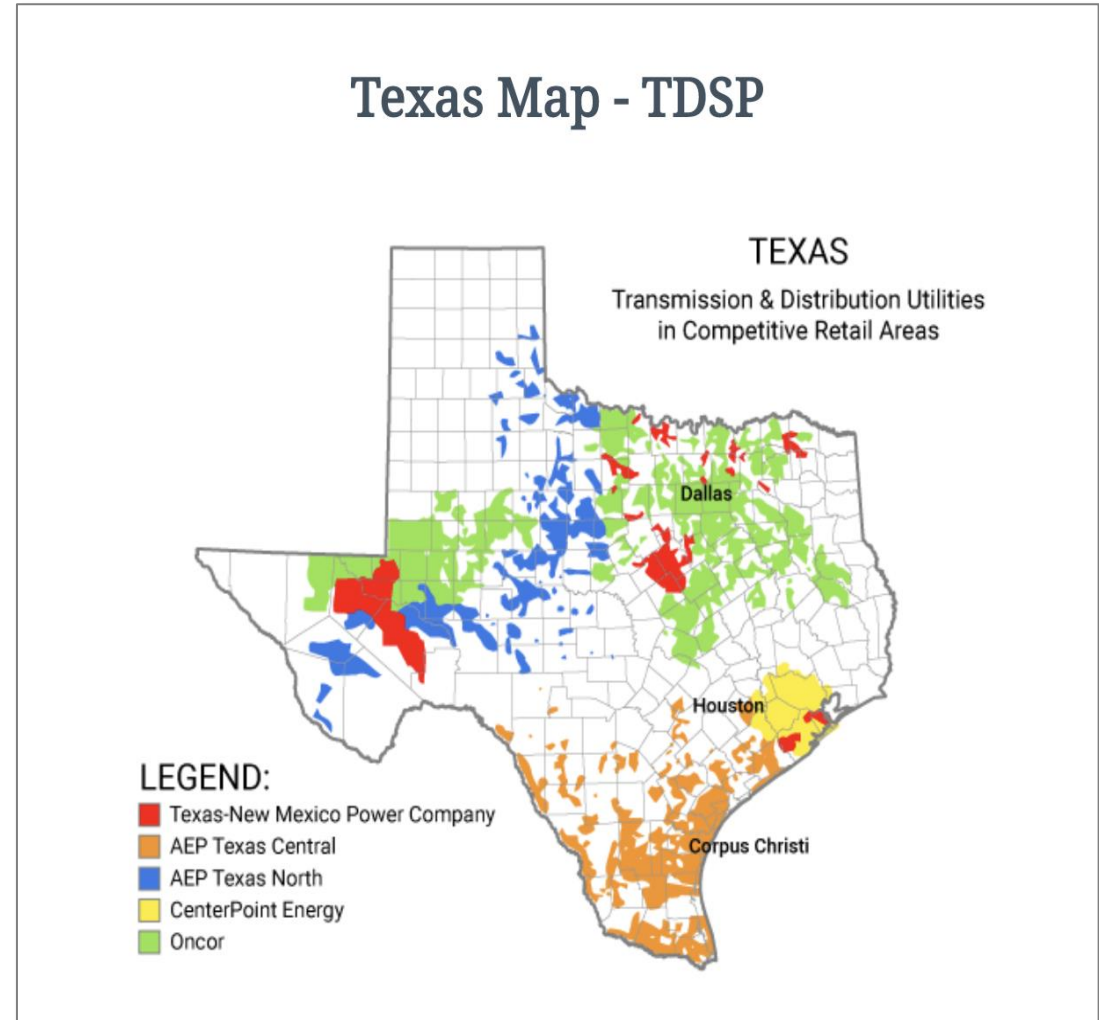


- PEC is voluntarily open and transparent
 - Board meetings are open to the membership, and are video recorded and live streamed
 - Voluntary Open Records policy
 - Voluntary Open Meetings policy
- As a co-op, PEC is a Non-Opt In Entity (NOIE), meaning PEC was not placed into electric choice at market open; instead, PEC's Board has the ability to vote to opt-in
- PEC's Board has not voted to opt-in to electric choice
- Why is PEC a NOIE?



ERCOT Retail Market Opens in 2002

- Senate Bill 7 (1999) required customer choice in the incumbent IOU's service territories in ERCOT
- Retail Electric Providers (REPs) were created to sell electric energy to retail customers in IOU areas
- But not all electric utilities were required to enter into competition...



Electric Co-ops and Municipally-Owned Utilities (MOUs) Deemed Non-Opt In Entities (NOIEs)

- Under Senate Bill 7, co-ops and MOUs are not required to provide customer choice, but have the opportunity to opt-in to electric choice
- This is primarily because NOIEs are governed by their customers, and those customers can vote for board or city council members that will implement electric choice if that's what the customers want



PUC Tasked with Policy Decisions to Implement Retail Market

- Electric wholesale market previously opened in 1996
- Three fundamental policy decisions established the framework for investment in ERCOT
 - Energy-only vs. Capacity Market
 - Zonal vs. Nodal Market
 - Competition Renewable Energy Zones

The New York Times

Texas Begins Electric Deregulation



By The Associated Press

Jan. 2, 2002

DALLAS, Jan. 1 -- With telephone deregulation came cellular phones, special phone features and cheaper long distance.

As of Tuesday, Texas consumers can expect to see similar technology and service advances under electric deregulation, which will mean lower rates and more control for consumers, state officials say.

"Today, we join 20 to 25 other states in retail deregulation," said state Rep. Steven Wolens, D-Dallas, who co-authored the deregulation legislation. "We're very optimistic and hopeful it will be the most successful deregulation transition in the country."

State officials say Texas won't be mired by the same woes

California faced. Unlike California, Texas has more electric

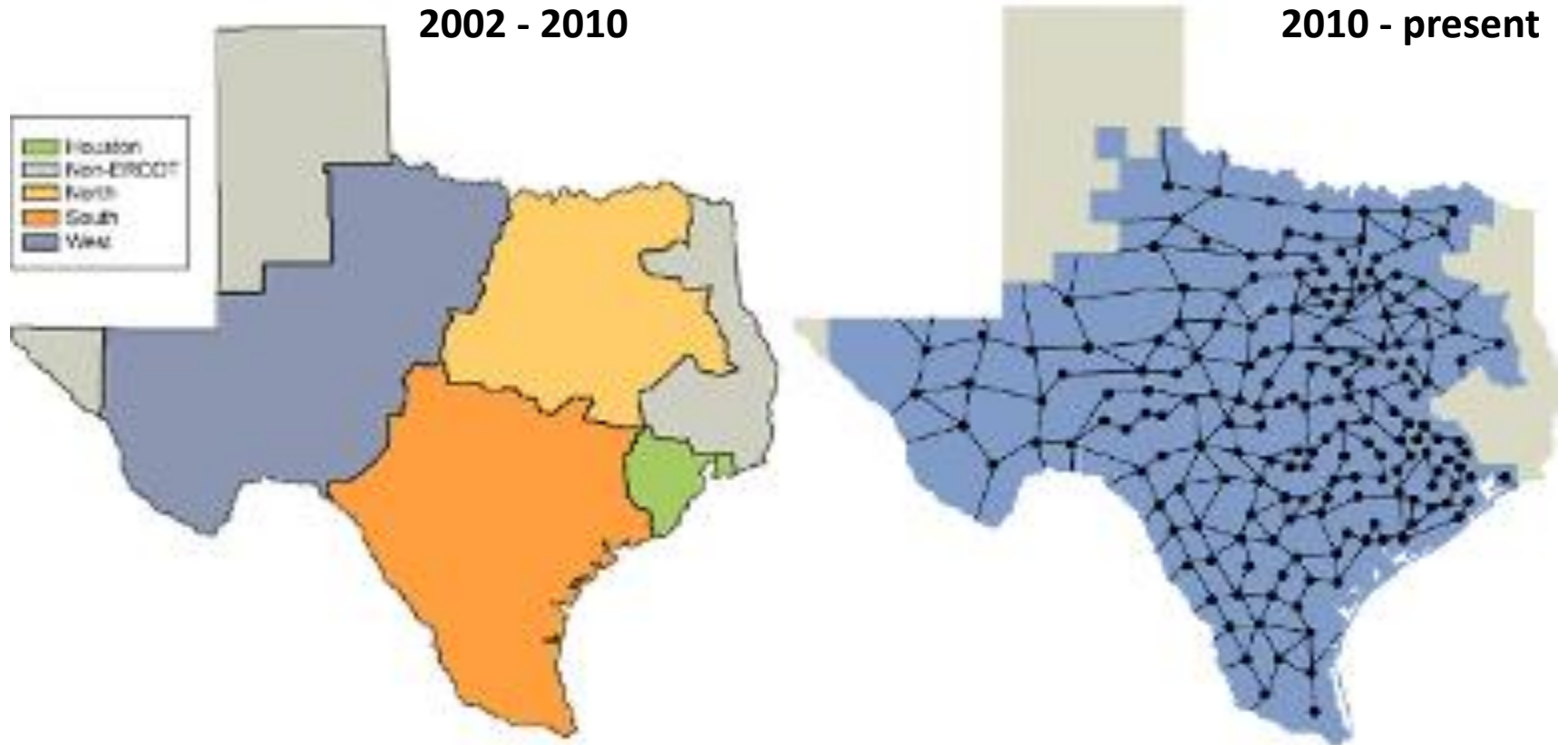
Energy-Only vs. Capacity Market

- Commission staff proposed a centralized capacity market in 2002
 - Flaws in other ISO capacity markets proved challenging to correct for Texas
 - Over 20% reserve margin in ERCOT
- Market participants proposed an energy-only market
 - Not a widely utilized market construct at the time
 - High prices during scarcity could be volatile but didn't require set capacity payments
- Energy-only selected as the best choice given free-market preferences and high reserve margins



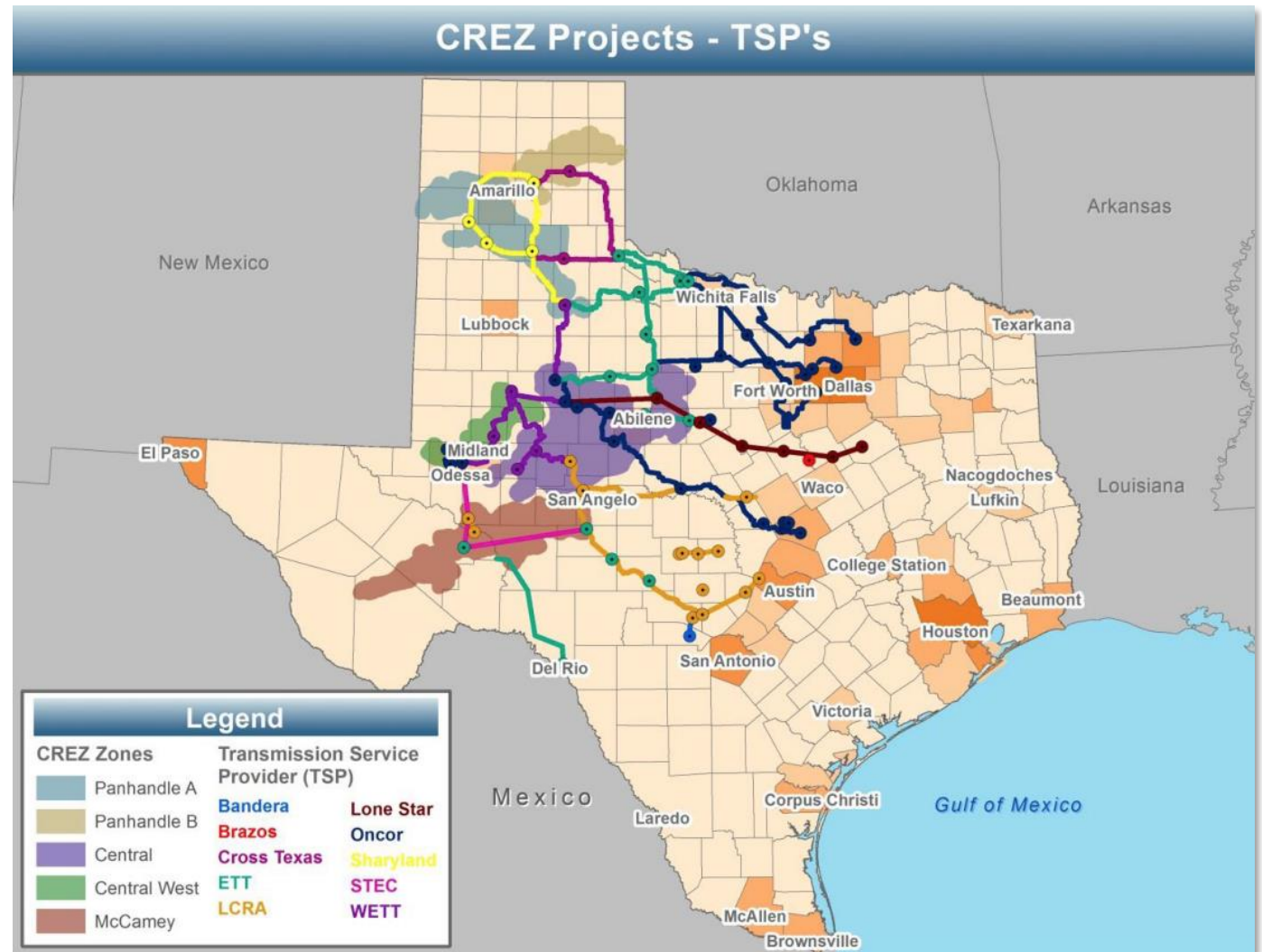
Zonal Market vs. Nodal Market

- At market open in 2002, ERCOT utilized a zonal clearing market
- After months of debate, PUC voted in 2005 to move to Nodal for generation but retain Zonal for load
- A benefit of Nodal was to incentivize the location of new generation to minimize congestion costs



Competitive Renewable Energy Zones (CREZ)

- CREZ was designed to move renewable power from locations where it was generated (typically more rural areas) to load centers
 - Senate Bill 20 establishing CREZ passed in 2005
 - Initial CREZ map adopted by PUC in 2008
 - Transmission Service Providers selected in 2009



And then . . .

2011 Winter Storm

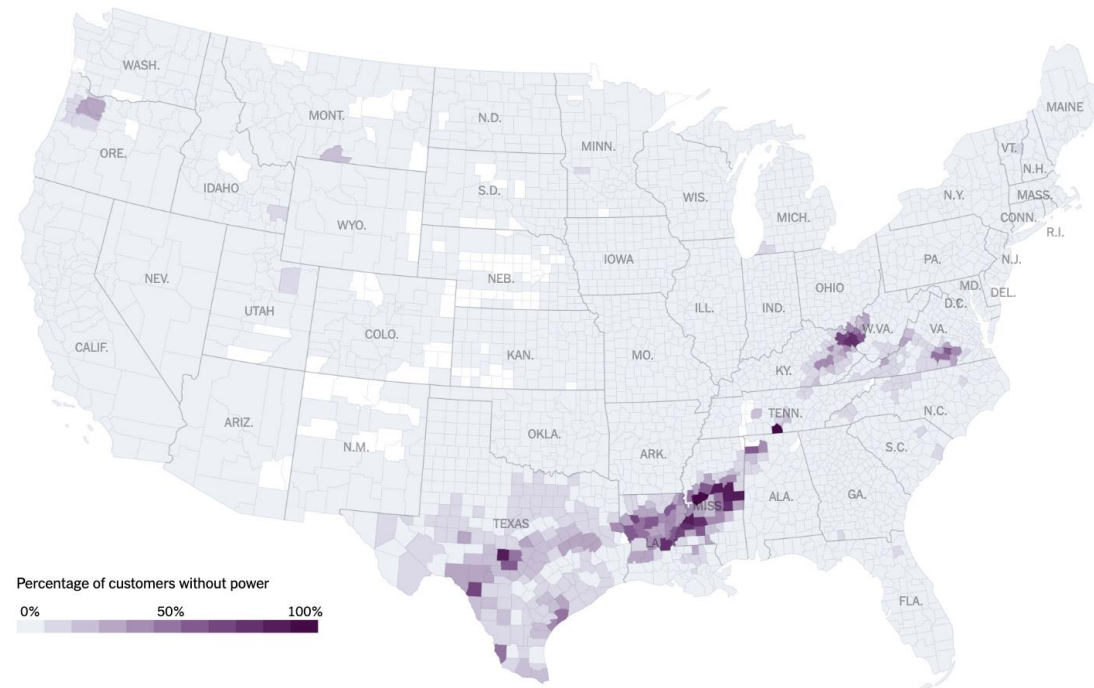
The New York Times

Mapping the Winter Storm's Impact

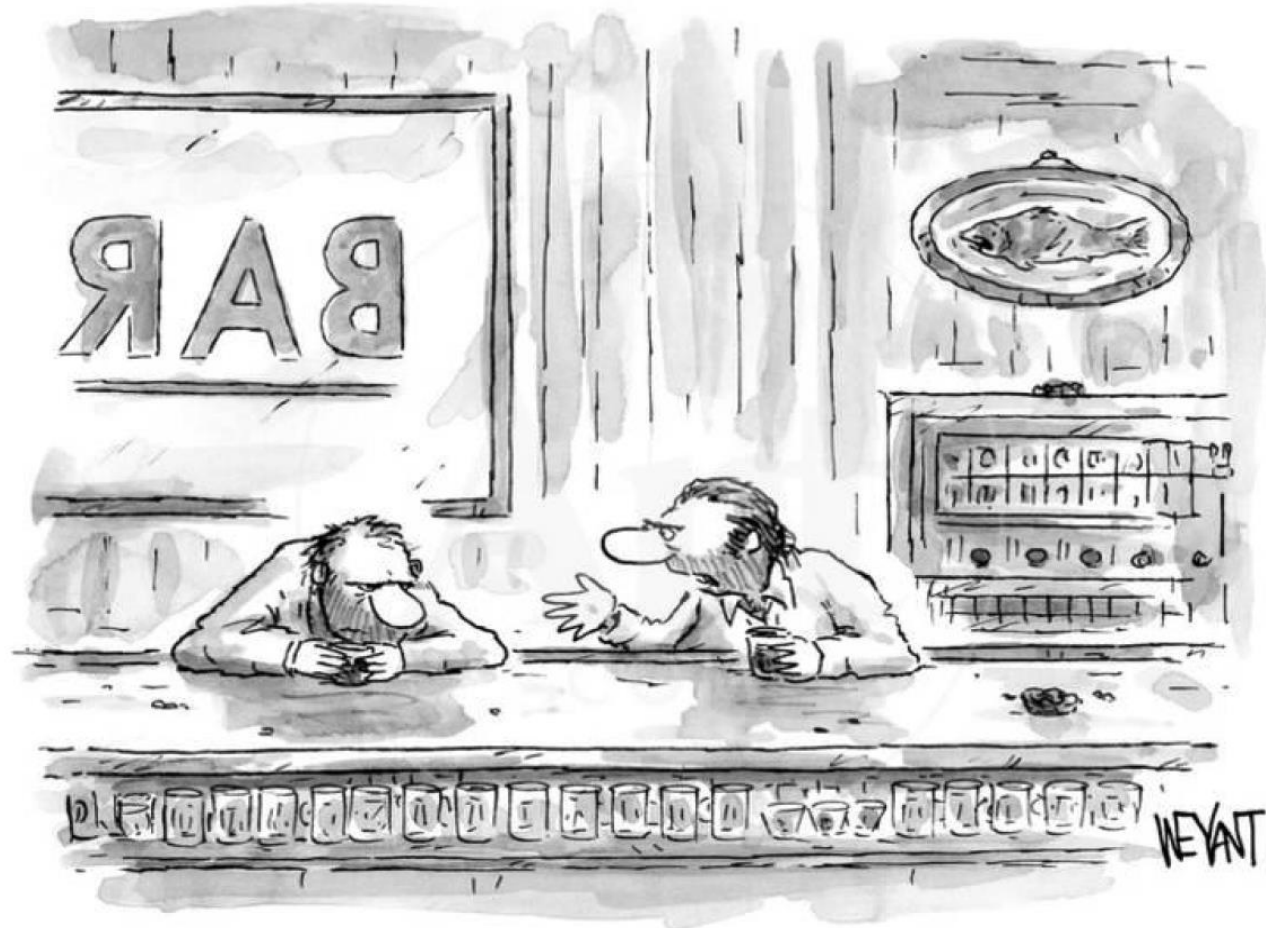
By [Nadja Popovich](#), [Tim Wallace](#), [Veronica Penney](#) and [Scott Reinhard](#) Updated Feb. 18, 2021

Nearly half a million homes and businesses in Texas [remained without electricity](#) — and, in many cases, heat — on Thursday morning, four days after a blast of frigid Arctic weather forced several of the state's power plants offline.

Widespread Power Outages Continue in Texas



Source: PowerOutage.us | Data is as of 10:30 a.m. Eastern time on Feb. 18.



"I don't know what the big deal is. I've been having rolling blackouts for years."

PEC's Post URI Assessments

Immediately after the winter storm, PEC leadership performed several performance assessments, including:

- **Third-Party Assessment**

Retained Utilicast to perform an external evaluation of system operations issues through people, processes, and technology

- **Internal Assessment**

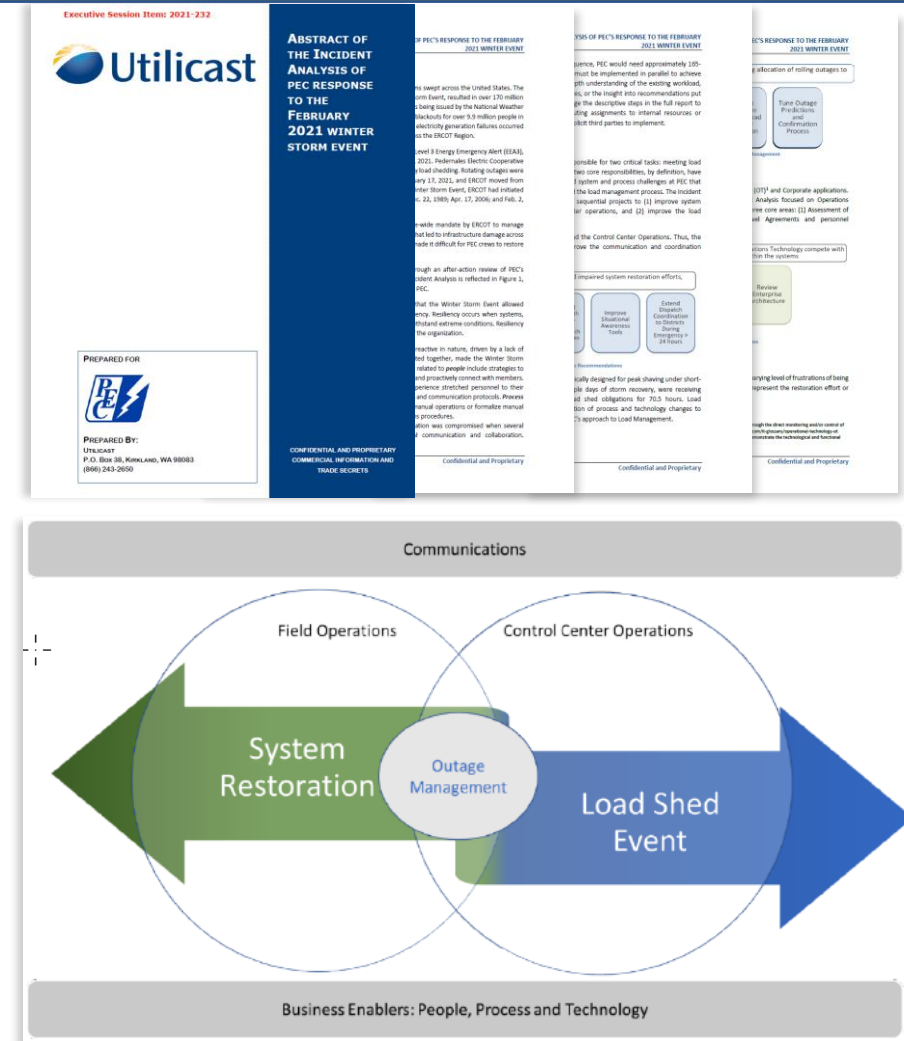
Control center upgrades and vegetation management changes

- **PUC and Transmission Assessment**

Weatherization and transmission restoration efforts

Third-Party Assessment

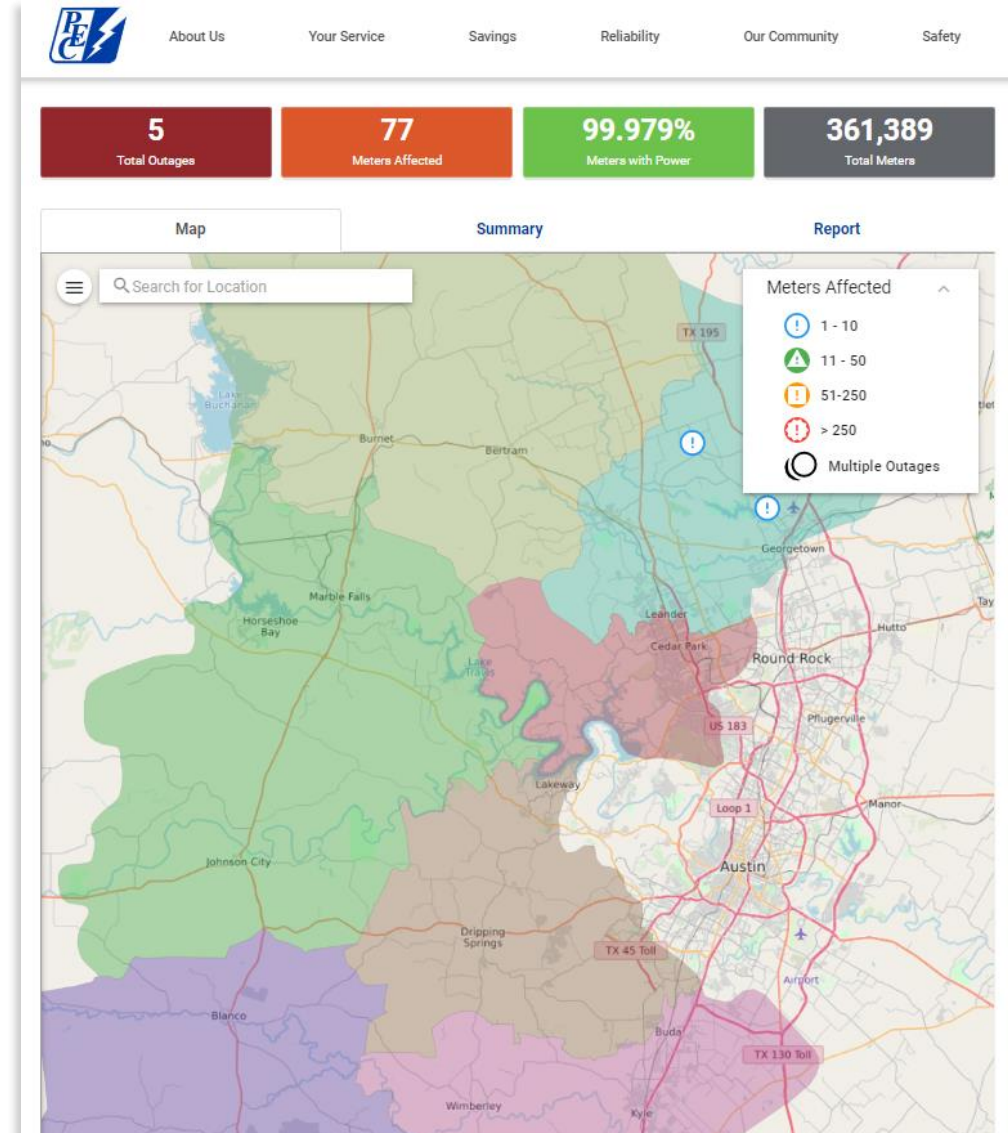
- **Incident Analysis of PEC Response to the 2021 Winter Storm Event** resulted in 23 recommendations by category for emergency response improvements:
 - ✓ 11 applied to Operations
 - ✓ 9 applied to Information Technology
 - ✓ 2 related to Communications
- PEC provided an Executive Summary of recommendations on its website for public review



Internal Assessment – Control Center Upgrades

CONTROL CENTER SYSTEM UPGRADES:

- **Updated Outage Map** – Now more reliable and accurate with integration to new OMS system
- **Mobile Application** – Provides current situational awareness with operational dashboards for outage and restoration data.
- **Mobile Application** – Provides operational field awareness and options for improved dispatching from the field as crews can identify and queue service requests through the system.



Internal Assessment - Vegetation Management

During the first two days of the storm, iced vegetation was the primary cause of individual outages across the territory. PEC has been developing a priority grading system for feeder trimming, that uses industry-leading technology for targeting specific spans of feeders.

2021 Approach - Focusing on C and D rated feeders, the team has cleared vegetation from over 75 feeders to a minimum 10-15 ft. from the primary.

Fall & Winter - As fall vegetation is in a dormant cycle, the team is prioritizing to work all D rated vegetation and critical infrastructure feeders through the end of the year.

Rating	Vegetation Reach
A	Outside of a 9-foot radius of the primary
B	Within a 9-foot radius of the primary
C	Within a 6-foot radius of the primary
D	Within a 3-foot radius of the primary or overhang

Priority	Critical Infrastructure Types
1	Hospitals, assisted living, emergency services
2	PEC facilities, public water and lift stations
3	Stores, restaurants, and hotels
4	Remaining substation feeders without critical load

PUC and Transmission Assessment

Weatherization

Because PEC does not own generation, PEC's battery and network of transmission substations were assessed and weatherized in accordance with PUC's weatherization rule

Transmission Assessment

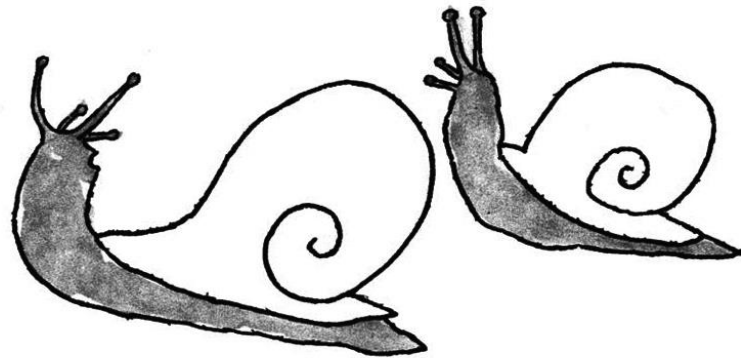
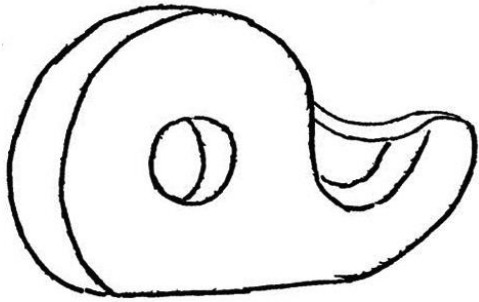
Staff from Operations and Engineering have had several meetings with LCRA and AEP to discuss preparedness, EOP drill procedures, and mutual assistance planning:

- Contractor access to substations:
 - Entities agreed to further assistance for emergency scenarios
 - Entities will improve direct access between Emergency Operation Centers
 - Access will be coordinated on a case-by-case, situational basis

PEC's Transmission Control Center

- PEC's transmission is currently operated by LCRA TSC under contract
- Contract to expire in 2024
- PEC is building a new Transmission Control Center and will begin operating its transmission assets
 - More than 300 miles of transmission
- Transitioning control of our own transmission system is an important step towards increased resiliency and continued reliability





S. GROSS

"I don't care if she is a tape dispenser. I love her."