CenterPoint Energy
@CenterPoint

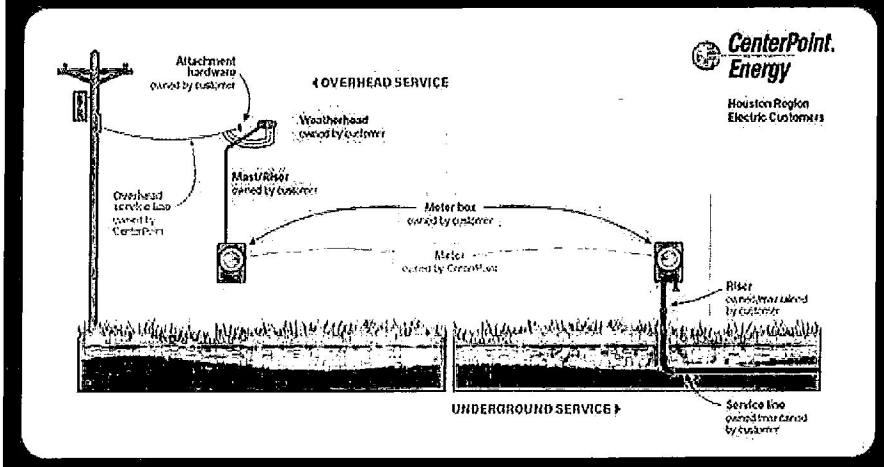
Working as one team to serve and restore our community.

1:42 PM · 7/15/24 · **9.4K** Views

5 Reposts **1** Quote **77** Likes

CenterPoint Energy
@CenterPoint

In addition to damaging our electric infrastructure and equipment, Beryl may have also damaged your customer-owned equipment. Customers should check their weatherhead, the point where power enters the home through an electric service drop, which is often a pipe located on the side of the house or building. If your customer-owned equipment is damaged, you'll need to contact a qualified electrician to make repairs before we are able to restore service.



2:01 PM · 7/15/24 · **7.6K** Views

6 Reposts **19** Likes **7** Bookmarks

CenterPoint Energy
@CenterPoint

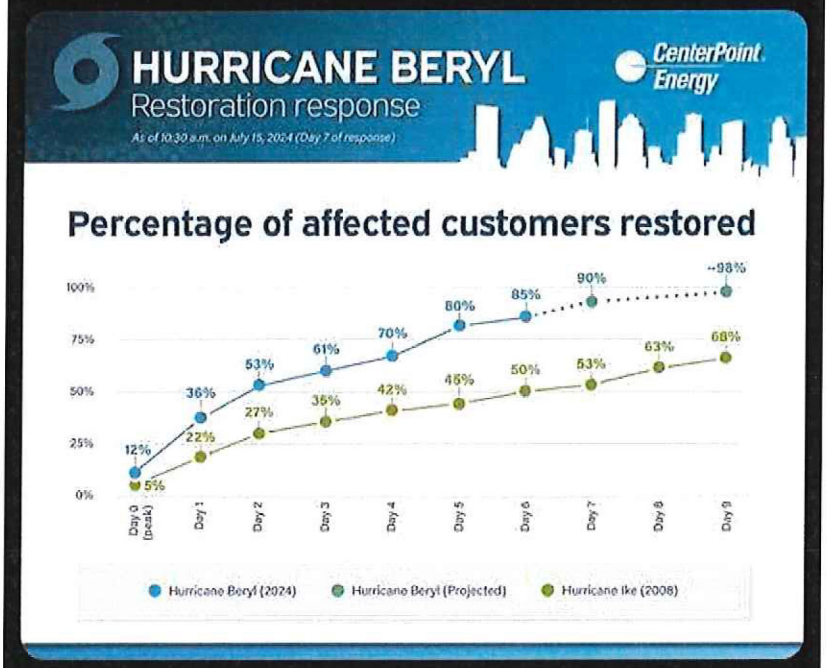
Installing a single utility pole can take up to 6 hours - here crews working on restoration efforts in North Houston are "framing" a pole in preparation to replace a pole damaged by Beryl's impact.

2:31 PM · 7/15/24 From Earth · **13K** Views

6 Reposts **3** Quotes **75** Likes **3** Bookmarks

CenterPoint Energy
@CenterPoint

We continue to make strong progress on our restoration efforts and the pace has been faster than what we have been able to do in other hurricanes in the past, including Ike in 2008. Read CenterPoint Energy CEO Jason Wells' update on our efforts: centerpointenergy.com/en-us/corporat...



2:49 PM · 7/15/24 · **11K** Views

7 Reposts **4** Quotes **20** Likes **1** Bookmark

CenterPoint Energy
@CenterPoint

As our restoration efforts continue, customers with power may experience brief power interruptions so that crews can safely reconnect other customers in the area.

3:10 PM · 7/15/24 · **19K** Views

3 Reposts **2** Quotes **50** Likes

TAB 16

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Tuesday July 16, 2024

Outages	Restoration (%)	Internal Crews	CNP Contractors* + Mutual Assistance	Mobile Gen
62,816 EOD	97%	1,131	14,529	5 energized

*CNP contractors are also referred to as native crews

For more information, contact
Communications
Media.Relations@CenterPointEnergy.com

For Immediate Release

CenterPoint Energy issues statement and provides restoration update

Company has restored nearly 96% of impacted customers

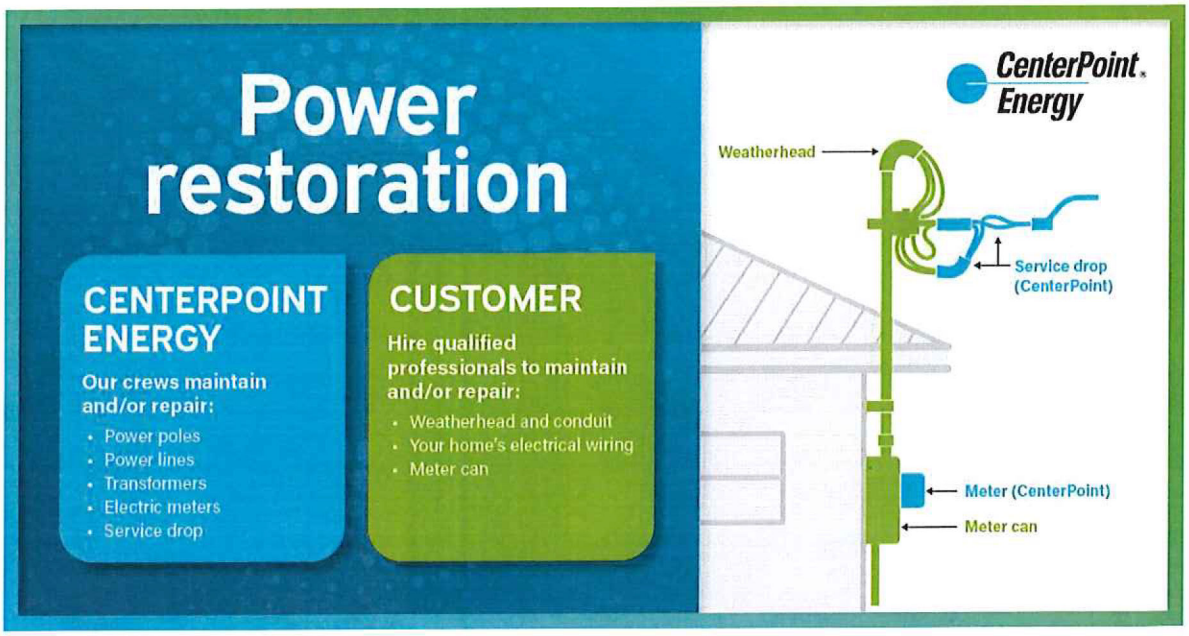
Houston — July 16, 2024 – CenterPoint Energy today announced that its crews have restored power to nearly 96% of impacted customers. The company remains on track to restore electricity to approximately 98% of impacted customers by the end of the day on Wednesday, July 17, and to all customers who can receive power by Friday, July 19.

In addition, the company issued the following statement in response to Governor Abbott's letter:

> *We have work underway to address the Governor's requests and are committed to collaborating with the State, local government, regulators, and community leaders to increase the resiliency of the electric grid. This work is integral to ensuring that we are creating and sustaining an environment in Texas where people want to live and build their businesses.*

How customers can support their restoration

As CenterPoint moves into the later stages of the restoration process, customers without power should check their weatherhead, the point where power enters the home through an electric service drop, which is often a pipe located on the side of the residence or building. If the weatherhead is damaged, crews cannot safely restore service to the home until a licensed electrician has made the necessary repairs. Customers who are served by an underground service will not have a weatherhead, but there may still be damage to their equipment that could require servicing.



For more information, contact
Communications
Media.Relations@CenterPointEnergy.com

For Immediate Release

Important safety reminders

- Stay alert – ask to see a company identification badge before allowing a utility worker in your home.
- Always stay at least 35 feet away from downed power lines and damaged electric utility equipment.
- Treat all down and damaged equipment as energized and report it to the company at 713-207-2222 or 800-332-7143.
- CenterPoint is currently experiencing longer than usual hold times across its region. The Customer Service team is only accepting calls for electric and natural gas emergencies at this time.
- If using a portable generator, place in a well-ventilated area and never run it inside to avoid a dangerous build-up of carbon monoxide.
- Crews are working to safely restore electric service for you and your family; please be cautious around restoration crews and give them plenty of room to safely assess damage and make repairs.

CenterPoint's electric customers are encouraged to enroll in Power Alert Service® to receive outage details and community-specific restoration updates as they become available. For information and updates, visit CenterPointEnergy.com/StormCenter and follow @CenterPoint for updates during inclement weather events.

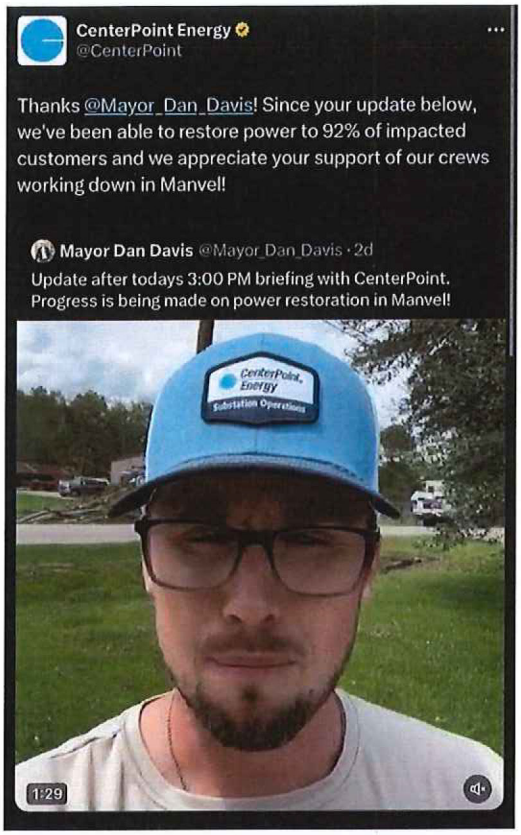
###

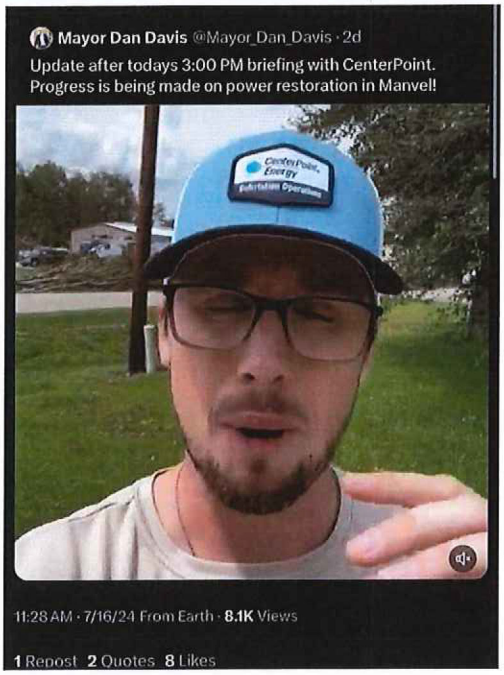
CenterPoint Energy
@CenterPoint

Day crews were off early this morning as Hurricane Beryl restoration efforts continue.

10:32 AM · 7/16/24 · **8.1K** Views

4 Reposts **4** Quotes **45** Likes **1** Bookmark


CenterPoint Energy
@CenterPoint
Thanks @Mayor_Dan_Davis! Since your update below, we've been able to restore power to 92% of impacted customers and we appreciate your support of our crews working down in Manvel!
Mayor Dan Davis @Mayor_Dan_Davis · 2d
Update after todays 3:00 PM briefing with CenterPoint. Progress is being made on power restoration in Manvel!
1:29


Mayor Dan Davis @Mayor_Dan_Davis · 2d
Update after todays 3:00 PM briefing with CenterPoint. Progress is being made on power restoration in Manvel!
11:28 AM · 7/16/24 From Earth · 8.1K Views
1 Repost 2 Quotes 8 Likes

CenterPoint Energy
@CenterPoint

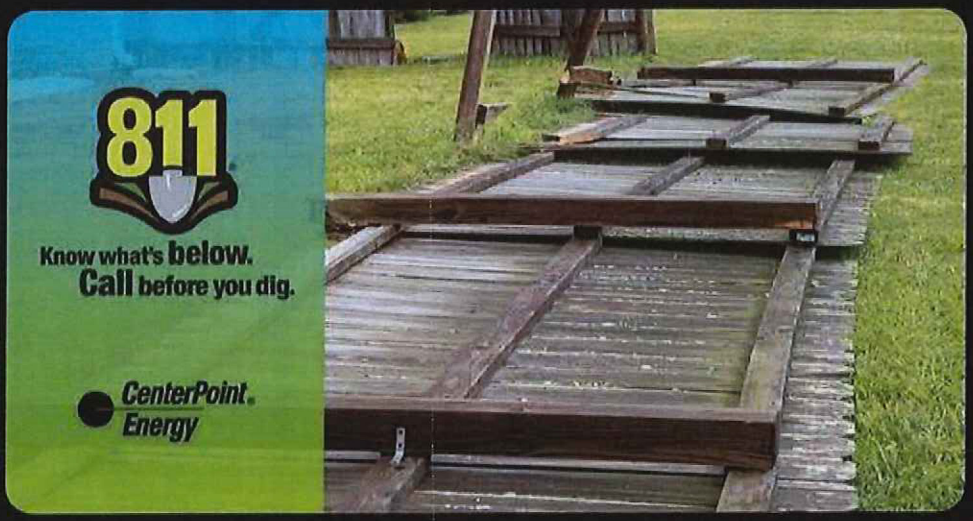
We've deployed mobile generation units to hospitals, medical and senior living facilities in Kingwood. They have also been deployed to hospitals, water treatment facilities and other critical centers around our service area. We're able to use these units to temporarily provide power, where we can safely and effectively do so. They help lessen customer impact as our restoration efforts continue.

11:39 AM · 7/16/24 From Earth · **9.1K** Views

4 Reposts **4** Quotes **35** Likes **2** Bookmarks

CenterPoint Energy
@CenterPoint

Did Beryl's winds bring down or damage your fence? Be sure you or your contractor contact 811 before starting any digging to have underground utility lines marked. It's not only the law but it helps keep you and your community safe:
call811.com



12:46 PM · 7/16/24 · **5.1K** Views

1 Repost **1** Quote **18** Likes **2** Bookmarks

CenterPoint Energy
@CenterPoint

If your power has been restored, you may experience brief interruptions as our crews continue their work around your communities.

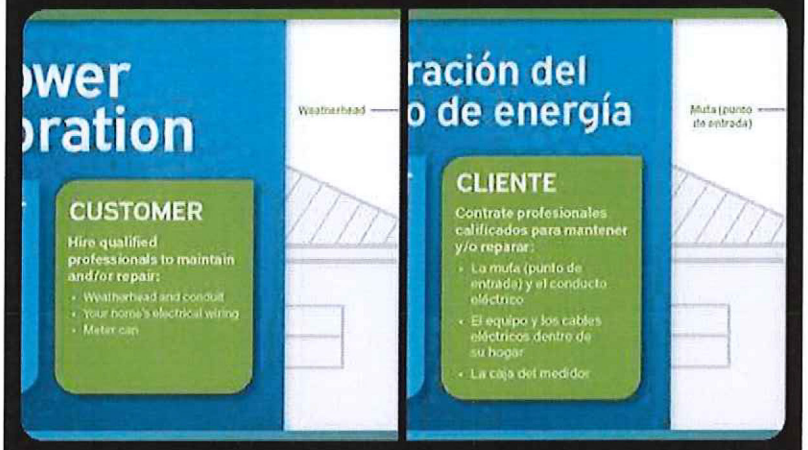
3:52 PM · 7/16/24 From Earth · **4.2K** Views

3 Reposts **31** Likes

CenterPoint Energy
@CenterPoint

If you are without power, please check your weatherhead, the point where power enters the home through an electric service drop, which is often a pipe located on the side of the residence or building. If the weatherhead is damaged, crews cannot safely restore service to the home until a licensed electrician has made the necessary repairs. Customers who are served by an underground service will not have a weatherhead, but there may still be damage to their equipment that could require servicing.

Read our latest update: centerpointenergy.com/en-us/corporat...



Last edited 4:55 PM · 7/16/24 · **1.9K** Views

2 Reposts **5** Likes

Restauración del suministro de energía

CENTERPOINT ENERGY

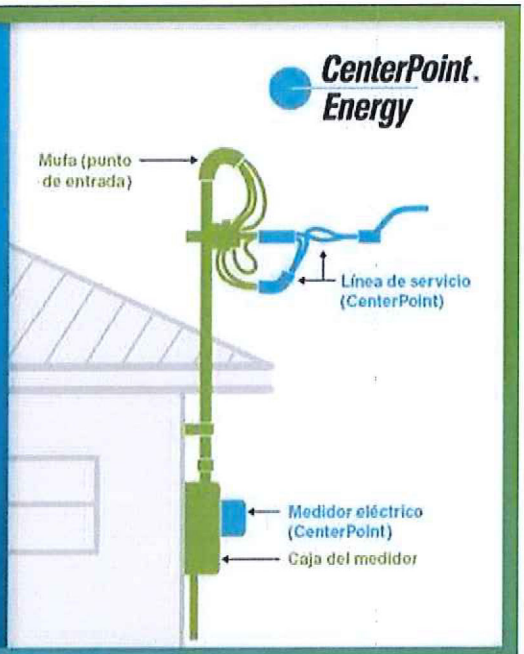
Nuestros equipos mantienen y/o reparan:

- Postes de energía
- Líneas eléctricas
- Transformadores
- Medidores eléctricos
- Línea de servicio

CLIENTE

Contrate profesionales calificados para mantener y/o reparar:

- La mufa (punto de entrada) y el conducto eléctrico
- El equipo y los cables eléctricos dentro de su hogar
- La caja del medidor



Power restoration

CENTERPOINT ENERGY

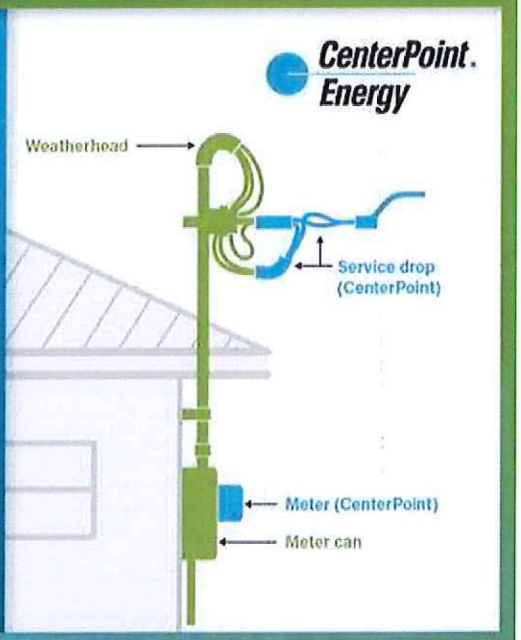
Our crews maintain and/or repair:

- Power poles
- Power lines
- Transformers
- Electric meters
- Service drop

CUSTOMER

Hire qualified professionals to maintain and/or repair:

- Weatherhead and conduit
- Your home's electrical wiring
- Meter can



CenterPoint Energy
@CenterPoint

Thank you to our CenterPoint crews, mutual assistance crews and vegetation management teams. Together they're working to restore power to all of our customers.

5:25 PM · 7/16/24 · **2.2K** Views

4 Reposts **1** Quote **26** Likes **1** Bookmark

TAB 17

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Wednesday July 17, 2024

Outages	Restoration (%)	Internal Crews	CNP Contractors* + Mutual Assistance	Mobile Gen
30,421 EOD	98%	1,131	14,529	2 energized; 1 enroute

*CNP contractors are also referred to as native crews

CenterPoint Energy
@CenterPoint

Promote ...

Our employees strive to provide for you and your families as quickly and as safely as we can. We appreciate your patience.

9:18 AM · Jul 17, 2024 · **45.4K** Views

CenterPoint Energy
@CenterPoint

Promote ...

Crews may need to utilize specialized equipment to remove vegetation, as seen here, so they can make repairs.

12:08 PM · Jul 17, 2024 · **4,298** Views

CenterPoint Energy
@CenterPoint

We appreciate all the mutual assistance crews out there in the heat and humidity helping get the lights back on for our customers - crews such as these from @AEPOhio .

> **AEP Ohio** @AEPOhio · Jul 15
>
> These are the faces of our field personnel who have been away from home the past 9 days, restoring power to Texans after #Beryl's destruction. It's who they are. It's what they do in times of need. And we couldn't be more proud. Come home safe! @AEPTexas @CenterPoint

12:57 PM · Jul 17, 2024 · **6,729** Views

CenterPoint Energy
@CenterPoint

Promote ···

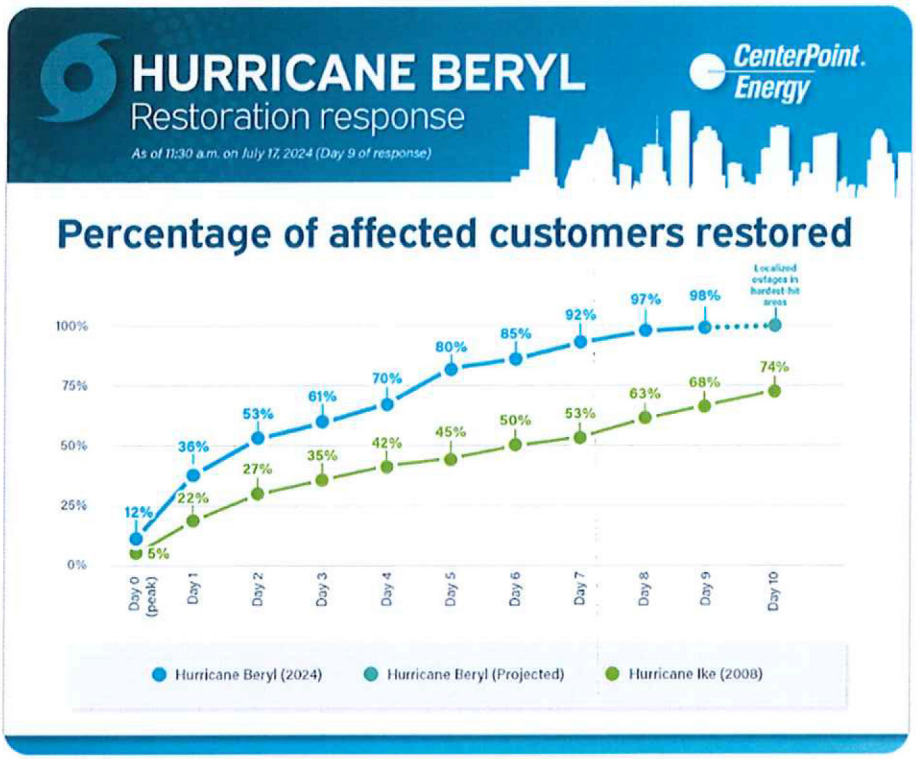
Our Damage Prevention team is integral to safe restoration efforts. When severe weather leads to electric infrastructure and property damages, repairs aren't as easy as simply putting things back into place. The team, alongside our contractors, helps locate and mark our buried utility lines so that damaged structures such as electric poles and equipment can safely be reset without damaging underground facilities. Their work is essential to aid in the restoration of impacted customers.

11:27 AM · Jul 17, 2024 · **3,933** Views

CenterPoint Energy
@CenterPoint

Promote ···

Thanks to our mutual assistance partners, first responders and local law enforcement for their support as our crews work to get the lights back on for every last customer in the wake of Hurricane Beryl. We expect to restore power to all customers who can receive power by Friday, July 19. Read our latest update: centerpointenergy.com/en-us/corporat...

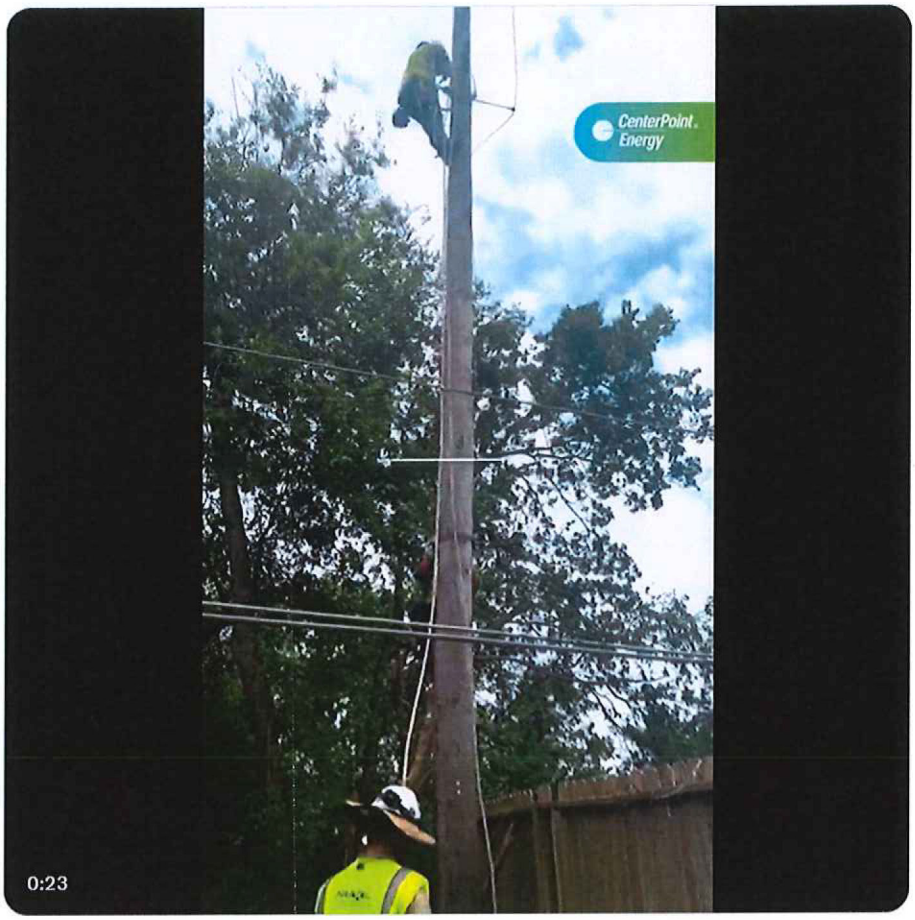


1:30 PM · Jul 17, 2024 · **7,766** Views

CenterPoint Energy
@CenterPoint

Promote ···

Our restoration efforts continue with teams working around the clock. For your safety and the crews' safety, please stay away from the workers so they can perform their jobs without interruption.



2:51 PM · Jul 17, 2024 · **3,741** Views

CenterPoint Energy
@CenterPoint

Thanks @AdrianGarciaHTX for sharing such a great picture of the work being done across the city by our crews and our mutual assistance crews!

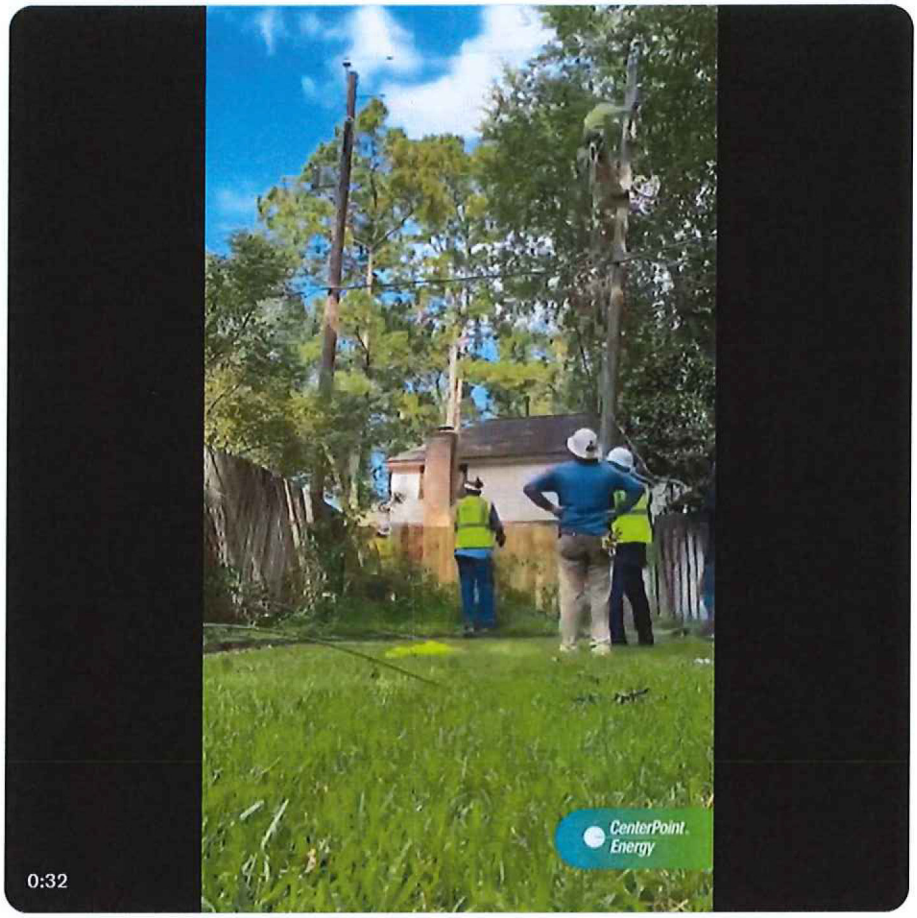
> **Adrian Garcia** @AdrianGarciaHTX · Jul 15
> x.com/adriangarciaht...

3:07 PM · Jul 17, 2024 · **7,048** Views

CenterPoint Energy
@CenterPoint

Promote ···

Here is a time lapse video of crews working yesterday in a Spring neighborhood where they replaced lines and conductors. Work continues to restore power to the area.



3:52 PM · Jul 17, 2024 · **6,792** Views

CenterPoint Energy
@CenterPoint

More great pics of the restoration work being done by mutual assistance crews. Thanks @austinenergy for the support!

> **Austin Energy** @austinenergy · 7h
>
> Thank you to our 20 lineworkers & support personnel from Austin Energy who are helping @CenterPoint Energy restore power in #Houston after Hurricane Beryl!
>
> Crews are making repairs to damage commonly seen with high winds, stormy weather and excessive rain.
>
> Show this thread

Last edited 5:56 PM · Jul 17, 2024 · **5,808** Views

CenterPoint Energy
@CenterPoint

Promote ...

Thank you @amr_social for your support at our staging sites.

6:16 PM · Jul 17, 2024 · **2,888** Views

CenterPoint Energy
@CenterPoint

Promote ...

Thank you @OGandE for helping in our restoration efforts. Pictured here, a lineman repairs distribution lines in Baytown.

6:45 PM · Jul 17, 2024 · **4,979** Views

CenterPoint Energy
@CenterPoint

Promote ...

We've made significant progress in our restoration efforts but our work isn't done. We'll continue working until the power is back on for every customer who can safely receive it.

9:02 PM · Jul 17, 2024 · **4,572** Views

TAB 18

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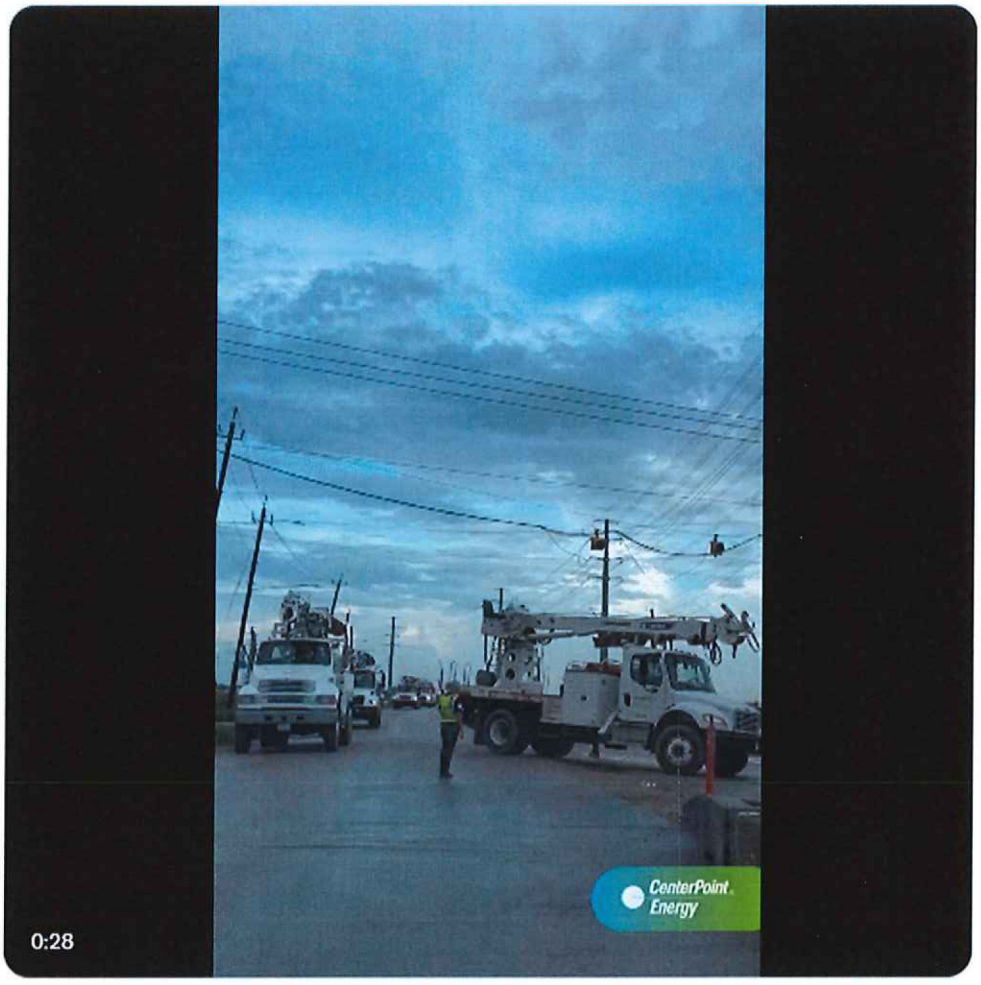
Thursday July 18, 2024

*CNP contractors are also referred to as native crews

CenterPoint Energy
@CenterPoint

Promote ...

Crews roll out from a staging site to continue working on restoration efforts. Thanks MDR Construction,Inc for your support.



8:30 AM · Jul 18, 2024 · **18.5K** Views

CenterPoint Energy
@CenterPoint

Promote ...

We continue to make progress in our restoration efforts thanks in part to mutual assistance crews. Pictured here, crews from Source Power are installing a fiberglass pole in Galveston. Thanks for the support.

11:50 AM · Jul 18, 2024 · **5,925** Views

CenterPoint Energy
@CenterPoint

Promote ···

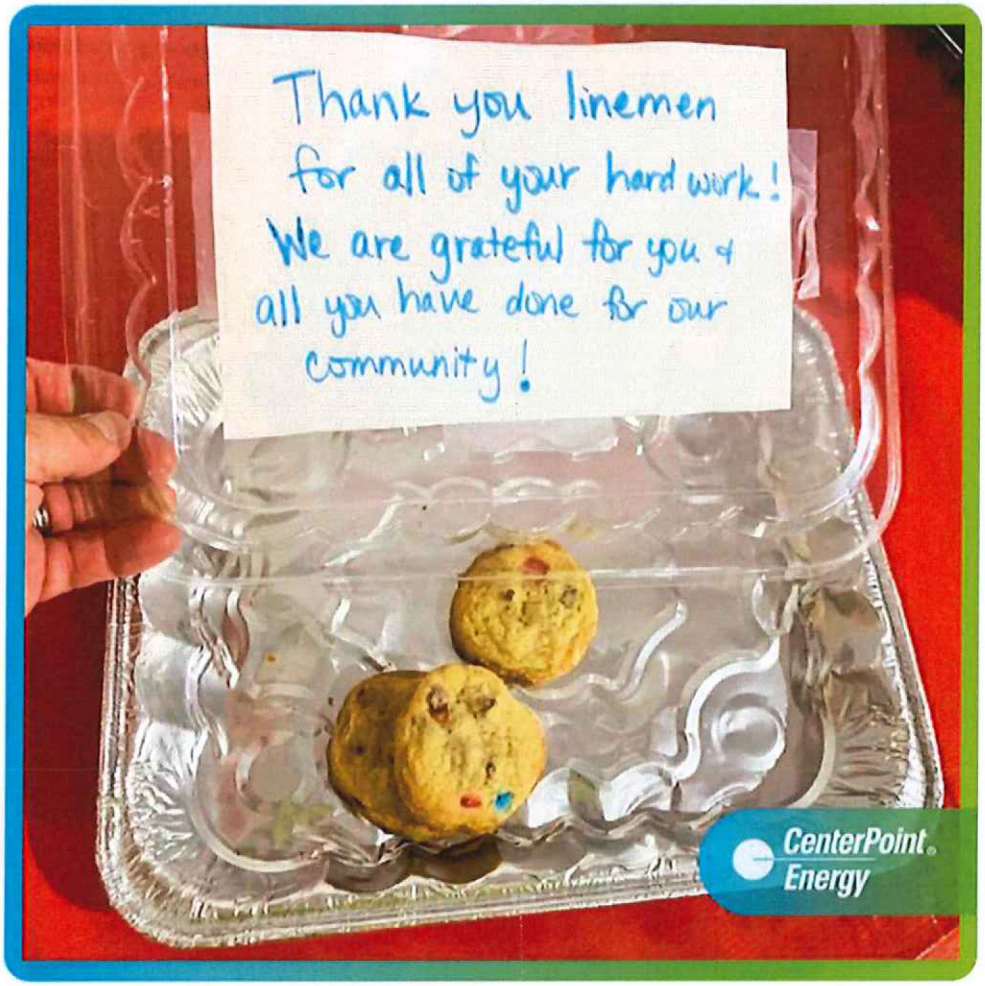
Daily safety briefings help keep our crews safe while they're working to restore power.

2:42 PM · Jul 18, 2024 · **4,508** Views

CenterPoint Energy
@CenterPoint

Promote ···

Thanks to the baker who gifted treats to our crews – we appreciate the sweet gesture.



3:15 PM · Jul 18, 2024 · **4,859** Views

CenterPoint Energy
@CenterPoint

Promote ···

Thank you @alabamapower for your support in our Hurricane Beryl restoration efforts.

6:45 PM · Jul 18, 2024 · **5,121** Views

CenterPoint Energy
@CenterPoint

Promote ···

Our vegetation management teams have been invaluable to our restoration efforts. Here, the team is working to remove a tree so that crews can safely make repairs.

8:28 PM · Jul 18, 2024 · **6,076** Views

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TAB 19

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Friday July 19, 2024

Outages	Restoration (%)	Internal Crews	CNP Contractors* + Mutual Assistance	Mobile Gen
4,713 EOD	Achieved 100% by EOD 7/19 (customers able to receive power)	1,131	3,328 EOD	All units decommissioned

*CNP contractors are also referred to as native crews

CenterPoint Energy
@CenterPoint

Promote ···

Teams meet at staging sites to discuss safety, collaboration and coordination to prepare for the day.

10:02 AM · Jul 19, 2024 · **2,609** Views

CenterPoint Energy
@CenterPoint

Promote ···

We take an all-hands-on-deck approach during an emergency response. Pictured here, an employee loads supplies for employees and mutual assistance crews.

10:45 AM · Jul 19, 2024 · **2,415** Views

CenterPoint Energy
@CenterPoint

Promote ···

We appreciate @PearlandPolice and @COPearland Fire Department for their support and all they do to keep the community safe.

2:55 PM · Jul 19, 2024 · **633** Views

CenterPoint Energy
@CenterPoint

Promote ...

Thank you Brink Constructors, Inc for helping in our restoration efforts. Pictured here, crews work to restore power in Magnolia, Texas.

3:30 PM · Jul 19, 2024 · **8,362** Views

CenterPoint Energy
@CenterPoint

Promote ···

Thank you @michelscorp for your support in Hurricane Beryl restoration efforts.

4:01 PM · Jul 19, 2024 · **5,045** Views

TAB 20

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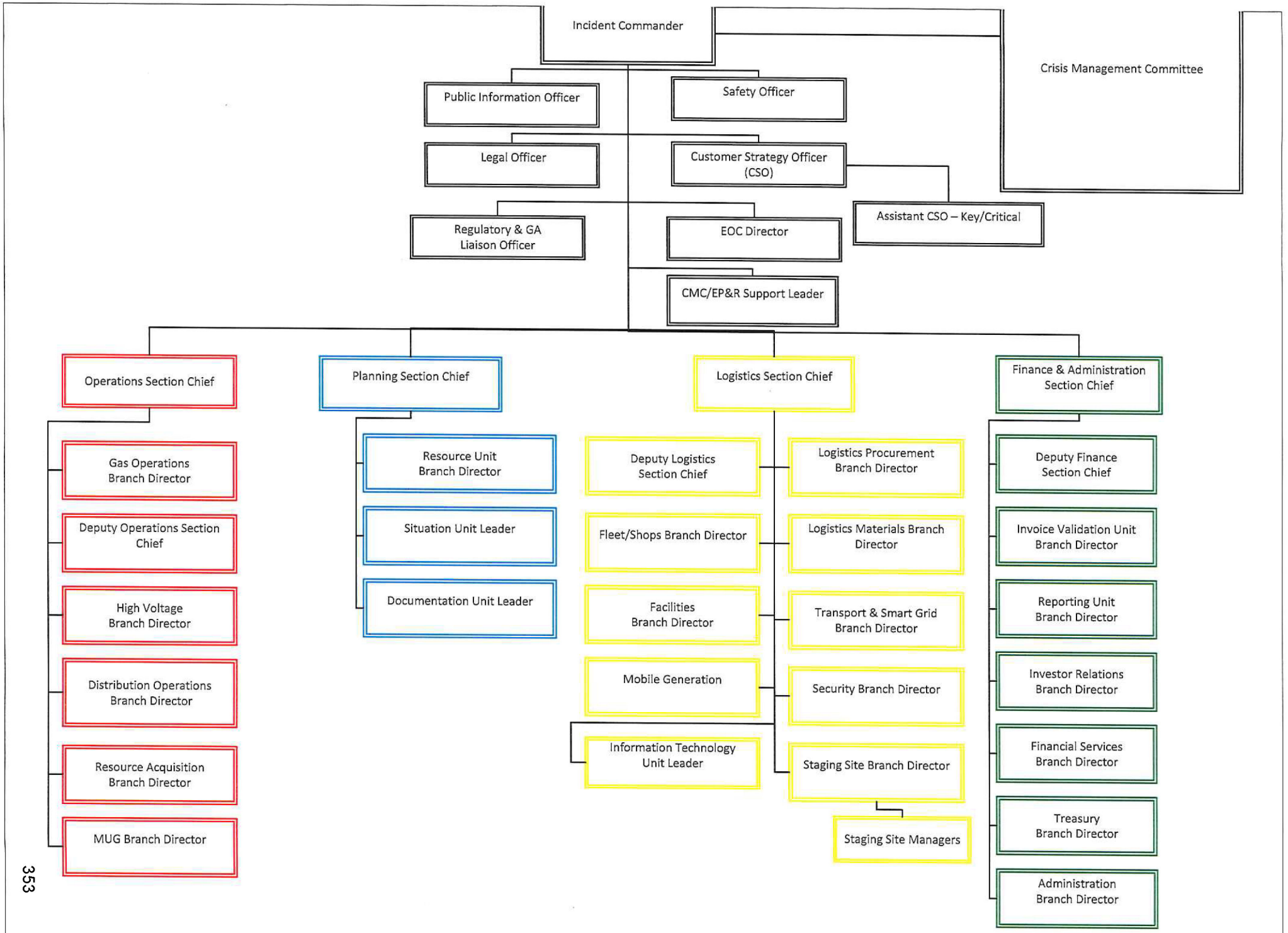

Incident Commander
Crisis Management Committee
Public Information Officer
Safety Officer
Legal Officer
Customer Strategy Officer (CSO)
Regulatory & GA Liaison Officer
EOC Director
Assistant CSO – Key/Critical
CMC/EP&R Support Leader
Operations Section Chief
Planning Section Chief
Logistics Section Chief
Finance & Administration Section Chief
Gas Operations Branch Director
Deputy Operations Section Chief
High Voltage Branch Director
Distribution Operations Branch Director
Resource Acquisition Branch Director
MUG Branch Director
Resource Unit Branch Director
Situation Unit Leader
Documentation Unit Leader
Deputy Logistics Section Chief
Fleet/Shops Branch Director
Facilities Branch Director
Mobile Generation
Information Technology Unit Leader
Logistics Procurement Branch Director
Logistics Materials Branch Director
Transport & Smart Grid Branch Director
Security Branch Director
Staging Site Branch Director
Staging Site Managers
Deputy Finance Section Chief
Invoice Validation Unit Branch Director
Reporting Unit Branch Director
Investor Relations Branch Director
Financial Services Branch Director
Treasury Branch Director
Administration Branch Director

2024 CEHE Hurricane Tabletop Exercise

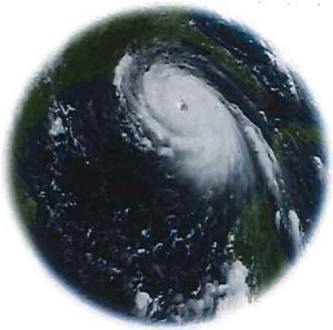
Tuesday, April 23, 2024
CNP Tower 1360/65
10:30 AM – 3:30 PM

AGENDA

10:30 AM – 10:45 AM	Registration
10:45 AM – 11:00 AM	Welcome
11:00 AM – 11:45 AM	Module 1
11:45 AM – 12:15 PM	Lunch
12:15 PM – 1:00 PM	Module 2
1:15 PM – 3:00 PM	Module 3
3:00 PM – 3:30 PM	Hotwash

OBJECTIVES

Operational Coordination	Identify a unified and coordinated operational structure and process that appropriately integrates all critical stakeholders and supports the execution of incident objectives.
Operational Communication	Discuss the capacity for timely communications in support of situational awareness, restoration operations, and customer support among and between responders and stakeholders/decision-makers.
Situational Assessment	Evaluate the process to provide all decision-makers with relevant information regarding the nature and extent of the hazard, any cascading effects, and the status of the response.
Planning	Test and validate existing hurricane response plans, processes, and protocols.



Hurricane Felice

SCENARIO SUMMARY

A tropical wave has quickly intensified into a tropical storm and has steadily strengthened as it tracks west-northwestward into the Caribbean Sea. The now named, Hurricane Felice, is entering the Gulf of Mexico and projected to reach Category 4 capacity when it hits the Mexico coast. Hurricane Felice shifts and is now projected to directly impact Galveston Island and the greater Houston area.

In the aftermath of Hurricane Felice, the greater Houston area is left with widespread flooding, damage, and debris throughout the region.

- Over 2 million customers are left without electricity
- 1,200 reported gas leaks
- Numerous impassible surface streets and roadways
- Extensive flooding in the Texas Medical Center
- Multiple CNP facilities sustained damage

DISCUSSION THEMES

Module 1

- Activation Triggers
- Situational Awareness
- Internal and External Communication
- Staffing
- External Partners Coordination

Module 2

- Evacuation
- Mutual Aid
- Emergency Policies
- Activation
- Mobile Generation
- Internal and External Communication
- Finance Processes
- Staging Sites

Module 3

- Response Priorities
- External Partners Coordination
- Resource Requests
- Staging Sites
- Technology Support
- Mutual Assistance
- Recovery Management
- Housing
- Inter-departmental Coordination

CEHE ICS Responsibilities

PLANNING

- Collect and provides situational awareness.
- Conduct incident-related data gathering and analysis regarding incident operations and assigned resources.
- Facilitate incident action planning meetings
- Prepare the Incident Action Plan (IAP) for each operational period.
- Facilitate coordination briefings.
- Oversee preparation of the Demobilization Plan.

LOGISTICS

- Manage the provision of all incident support needs.
- Secure and assign resources.
- Provide facilities, transportation, supplies, equipment maintenance and fuel, communications.
- Establish, maintain, and enable integrated communications and technology infrastructure to support incident management
- Acquire food and medical services for incident personnel.
- Negotiate and maintain leases and vendor contracts.

FINANCE

- Oversee recording personnel time, tracking and analyzing incident costs and considers cost recovery.
- Create Emergency Work Order.
- Increase in financial approval limits for key leaders involved in the emergency response.
- Manage time sheets and work tracking processes.
- Administer pre-emergency purchases of critical materials or products for response or mitigation efforts.
- Delegate purchase approvals to key emergency response leaders.

COMMAND

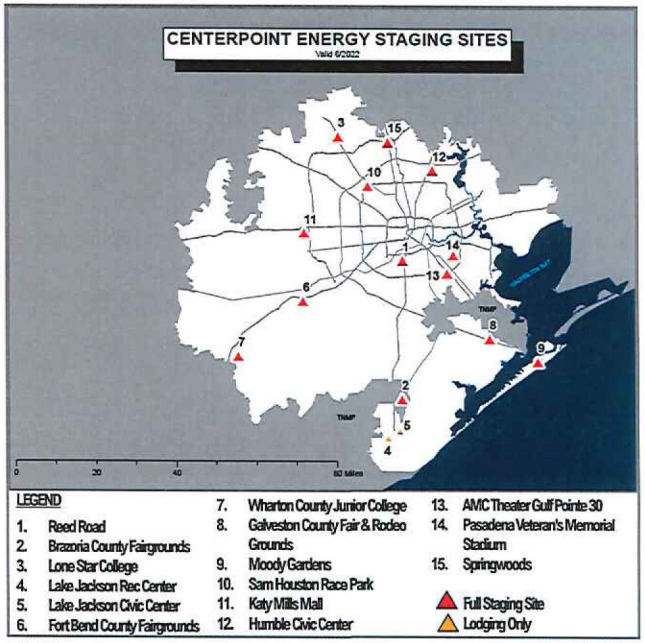
- Direct the overall management of the incident and guide the incident to resolution as safely, quickly, and completely as possible.
- Establish incident objectives
- Lead information management including obtaining information from and disseminating to the community and media
- Coordinate between the Command/Response Coordination and the Joint Information Center (JIC).
- Advise on issues regarding incident safety and ensure the safety of field personnel.
- Provide guidance on regulatory issues impacting the response and coordinate communications with regulatory agencies, public officials, and others.
- Advise on legal issues impacting the response and administering claims.
- Serve as liaison for agencies supporting the operation.

STAGING SITES

- Maintain a ready reserve of tactical resources and operational overhead to support evolving or emergent operational resource requirements.
- Establish and maintain check-in, storage, and distribution of all resources at staging.
- Provide for ground support and vehicle maintenance.

OPERATIONS

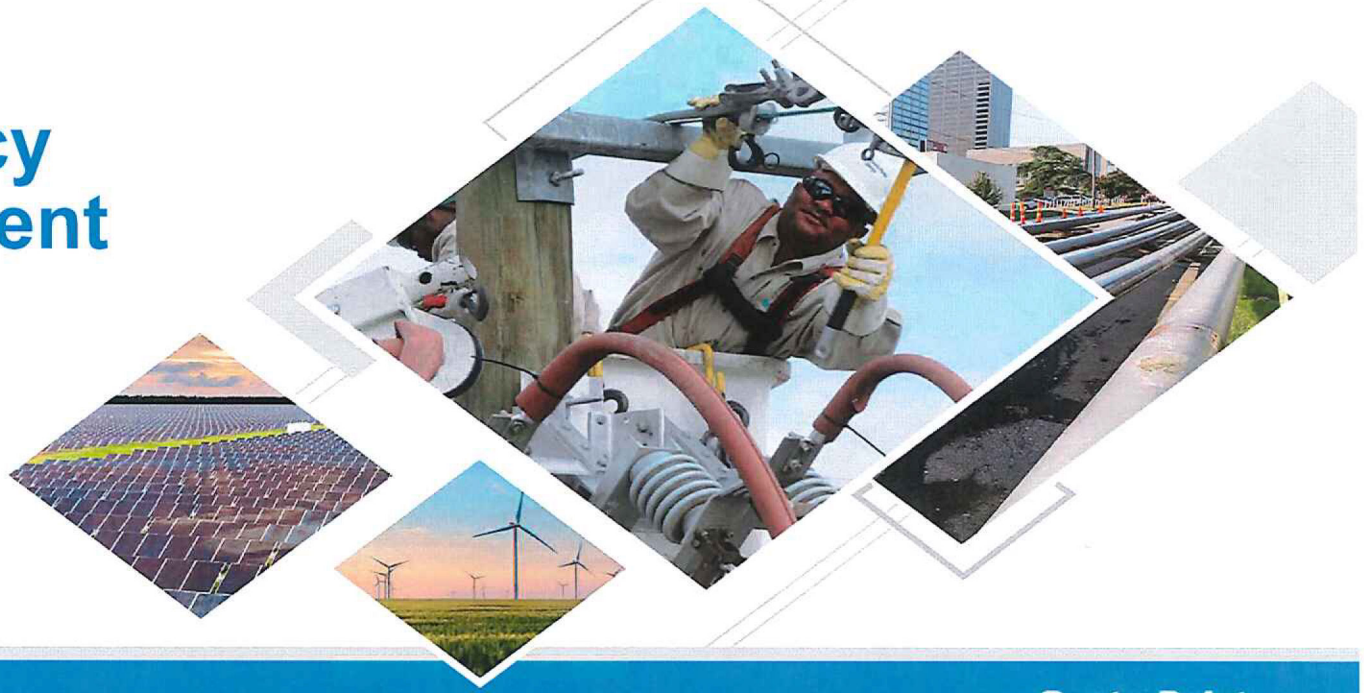
- Establish tactical/operational objectives.
- Plan and perform tactical activities to achieve the established power repair and/or restoration objectives.
- Manage assigned resources.
- Assure safety of tactical operations.
- Develop the operations portion of the Incident Action Plan (IAP).
- Supervise execution of operations portions of the IAP.
- Request additional resources to support tactical operations.
- Approve release of resources from active operational assignments.



Continuing to execute on our path to premium

Emergency Management

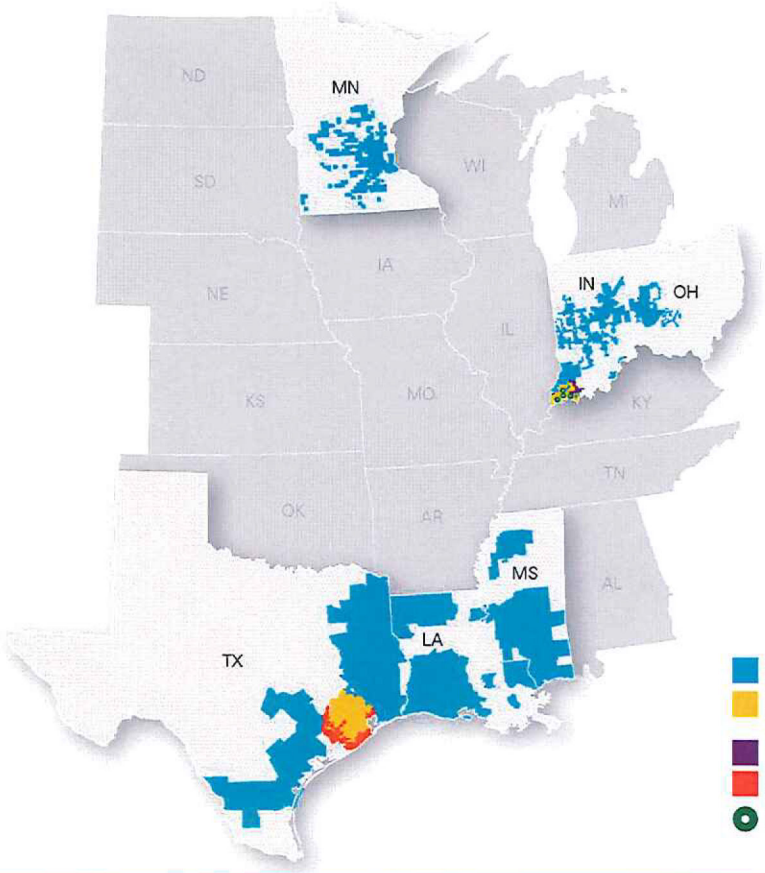
Jonathan Robb, CEM



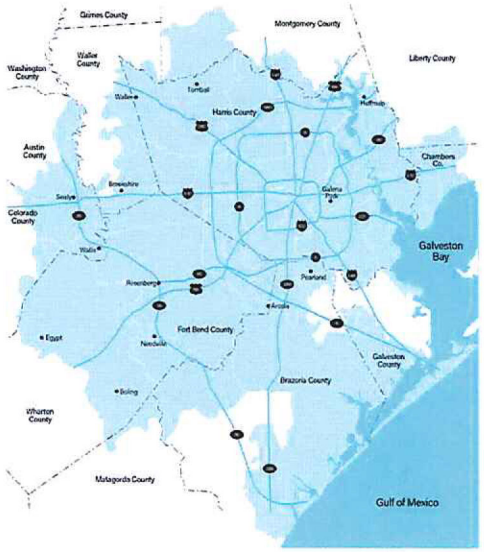
April 5, 2024

CenterPoint Energy

Where We Operate



TX Electric Service Territory



- Natural Gas Distribution
- Combined Electric Transmission & Distribution and Natural Gas Distribution
- Indiana Electric Transmission & Distribution
- Houston Electric Transmission & Distribution
- Indiana Power Generation

Natural Gas Distribution, Electric Transmission & Distribution and Power Generation

nearly
7 million
gas and electric metered customers

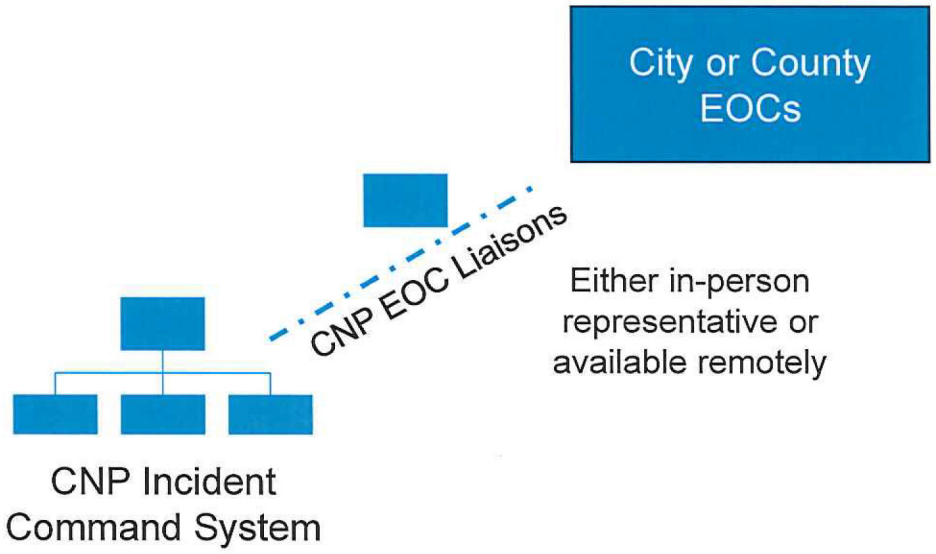
6
states

Advance Preparations – Emergency Operating Plans

- Our Electric and Natural Gas businesses each has an Emergency Operations Plan
- Annual drill to test our emergency response
- Adoption of FEMA's Incident Command System
- Coordinate with state and local officials
- Work with a mutual assistance network that allows us to provide/receive assistance to/from other utilities across the country following natural disasters
  - On average, CenterPoint Energy sends linemen 4-6 times per year to help other utilities restore power
  - Contracts for fuel, lodging and materials are executed in advance so we're ready if a storm strikes

Regional Mutual Assistance Groups

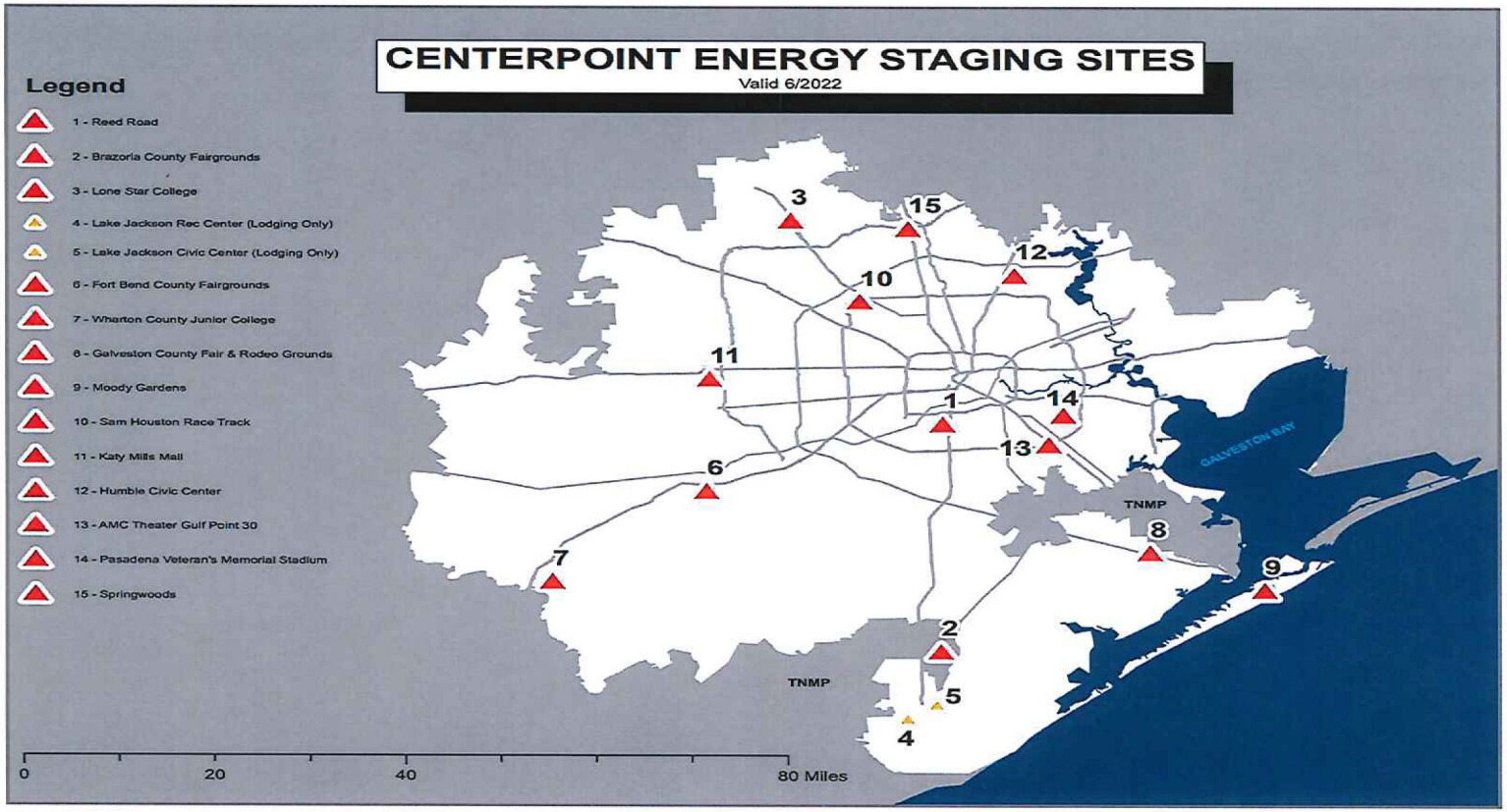
Incident Command Structure Organization



Restoration Execution
Restore Power Safely and Efficiently

1. Restore service to key facilities vital to public safety, health and welfare and secure downed power lines
2. Repair major lines and fuses that restore power to greatest number of customers in least amount of time
3. Repair transformers, which typically serve about 10 customers
4. Repair individual electric drops to homes

Staging Sites



Electric - Emergency Operations Plan (EOP)

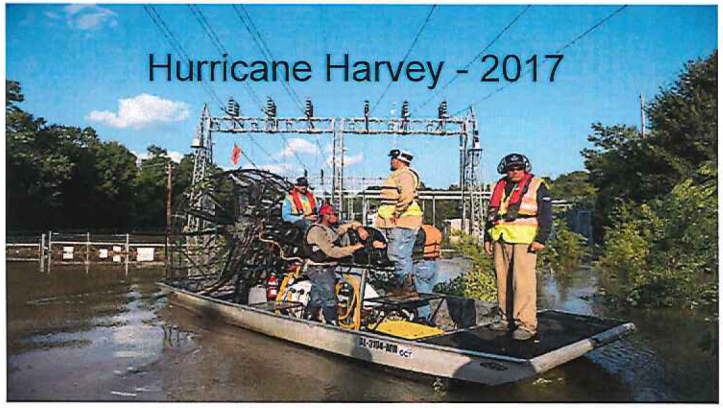
To ensure the emergency response is well coordinated and consistent across all operations, CenterPoint Energy has developed a 4-level emergency criteria. The activations range from a Level 4 which is a small, localized incident that likely only requires day-to-day operational resources with little to no media coverage or significant impact, all the way to a Level 1 which represents a larger enterprise-wide crisis

CNP Emergency levels:

	Staging Sites	Resources	Impact	Duration
Emergency Level 4	0	Handled by on-duty staffing	Minimal	< 1 Day
Emergency Level 3	1	<500	Low	1-2 Days
Emergency Level 2	2-4	500-2000	Medium	3-5 Days
Emergency Level 1	5+	2000+	High	5+ Days

Wind Event vs. Water Event

- **2.1 M** of 2.2M customer impacted 2.1 M
- **1287** Circuits Out - 1492 total circuits
- @ **7,200** poles down
- @ **332,045** ft wire down
- Replaced @ **4,460** transformers
- Approximately **12,000** contractor resources
- 10 Staging Sites, 12 Service Centers, 5 Evaluation Centers



- **293** total electric circuits locked out and **4,494** total electric fuses out
- **8** substations out of service and **9** substations inaccessible due to high water
- More than **2,200** employees plus **1,500** contractors & mutual assistance personnel from **7** states
- **308** SAIDI minutes with **1.2 million** customers impacted
- **755 million** total minutes out over 10 days
- 5 Staging sites

Temporary Emergency Electric Energy Facilities

"Utility grade solution to deal with the future extreme weather threats or generation shortfalls"

- Deployment Priorities
  - Civic leader priorities (stakeholder input)
    - Protecting Life
    - Protecting property
    - Stabilizing the event and economy
  - Medical facilities
  - Emergency Operation Centers
  - Public Works and municipal systems
  - Critical facilities – police, fire, assist in load rotation and other
- Mobile site requirements
  - Anticipated outage duration
  - Capability of generator (5 & 30 MW)
  - Site capability to host generator - connection requirements
- 17 units in the CEHE footprint equaling 500MW

Communication Plan

- During an event, prompt notification and regular updates are provided to:
  - Texas Division of Emergency Management (TDEM)
  - Public Utility Commission of Texas (PUCT)
  - Electric Reliability Council of Texas (ERCOT)
  - Department of Energy
  - Retail Electric Providers (REPs)
  - Texas Department of Transportation
  - Appropriate local utilities
  - Law enforcement (Department of Public Safety, local police)
  - Federal, State and Local Government elected officials and Office of Emergency Management personnel

  CenterPoint Energy liaisons are in contact with:

Harris County	Galveston County	Brazoria County	Chambers County
Fort Bend County	Montgomery County	City of Houston	

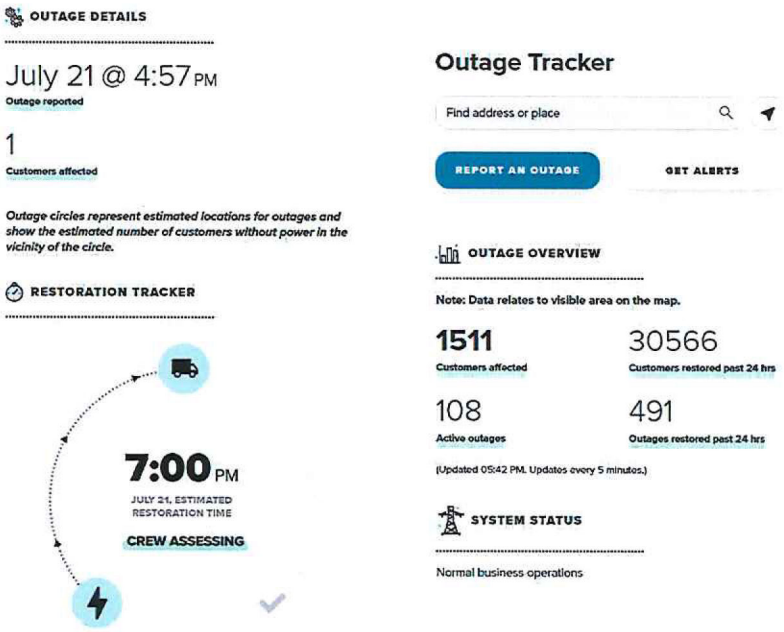
- 24-hour telephone operation service is maintained

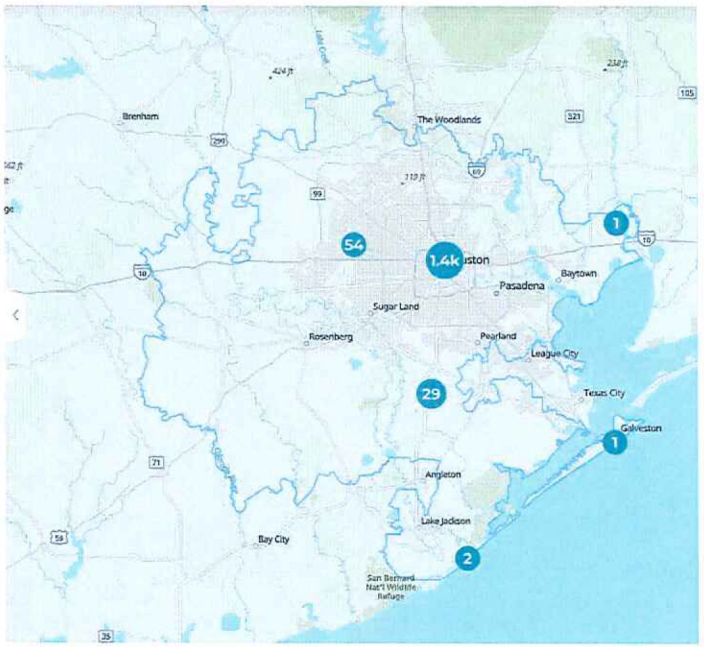
Outage Tracker

CenterPoint Energy's online Customer Outage Tracker displays current outage locations and estimated time to restore power.

The map offers a link for customers to report their outage and register for outage notification via Power Alert Service.

https://www.centerpointenergy.com/outagetracker





Power Alert Service

Power Alert Service helps minimize the impact of a power outage by sending free text, email or phone call notifications when the power goes out. Regardless of where you are, you'll get updates on outages and estimated restoration times.

- Alerts when outages affect your home or business
- Restoration time estimates
- Notice when power is restored

Additional Communication Tools

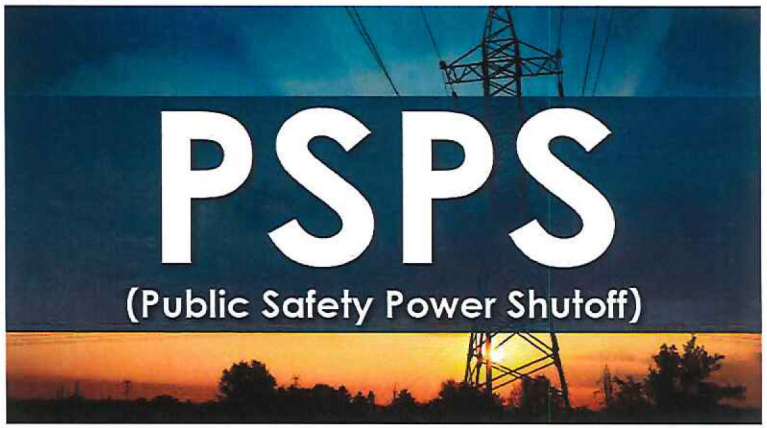
In the event of a severe weather emergency such as a hurricane, CenterPoint Energy will utilize Power Alert Service as a one-to-one and one-to-many notification approach sending segmented blast messages to customers.

Other channels include social media, such as NextDoor and:

@CenterPoint | @CNPalerts | @CNPalerts_IN

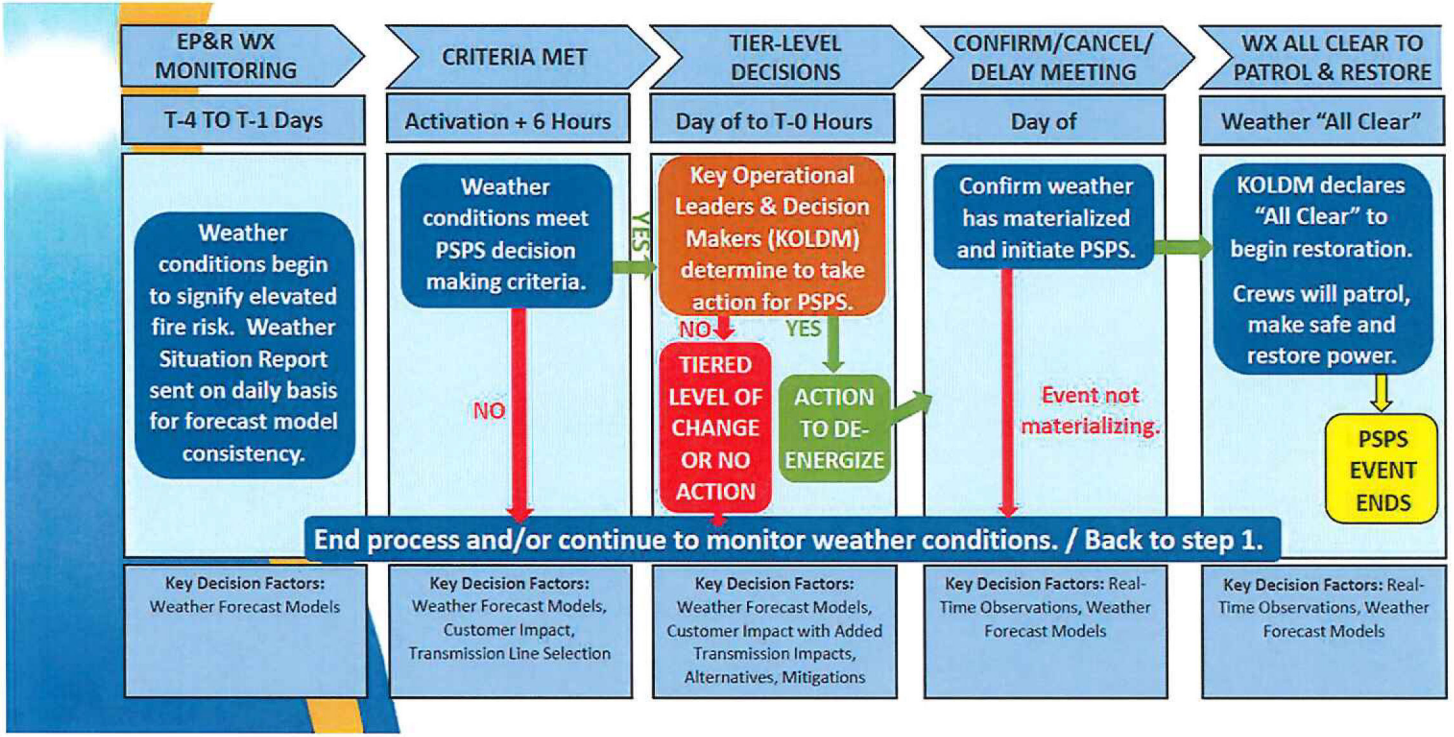
Facebook.com/CenterPointEnergy

Path Forward



- Public Safety Power Shutoff (PSPS)
  - Protocols in place since Hurricane Harvey in 2017
  - Enhanced protocols in light of recent heightened wildfire risks
    - Summer 2023 drought and heatwave
    - Maui wildfires
    - Texas Panhandle wildfire
  - All about Public Safety
    - Does the situation become safer if the power is turned off?
  - Understanding many important capabilities depend on stable electricity
    - Hospitals
    - Critical care customers
    - First Responders, EOCs
    - Communication networks
  - PSPS is circuit-by-circuit basis n areas with highest wildfire risk.

Path Forward



Questions/Comments

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TAB 21

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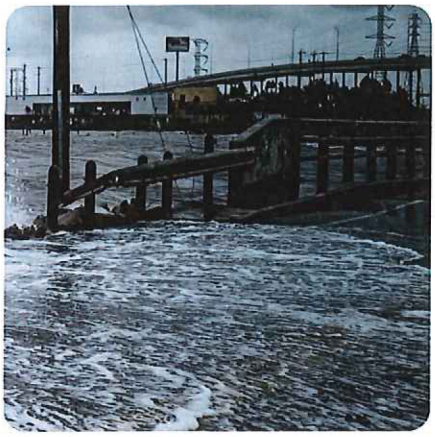
OUR EXPERTS

- PA Consulting
- Next Level Energy Solutions: Manny Miranda
- Frank Billingsley, Meteorologist
- Texas A&M Forest Service: Wes Moorehead
- Boston Consulting Group
- Bent Ear Solutions Emergency Management Team: Craig Fugate
- Hawthorn Group: John Ashford, Tim Fitzpatrick, Bryant Kinney, Matt Hirsch
- Hagerty Consulting
- Nelson Research: Nelson G. Bingel III
- StormImpact: Dr. Steven Quiring, Jamie McKee, Dr. Brent McRoberts, Scott Hull



Post-Storm Review Experience

CenterPoint Energy

July 2024

Bringing Ingenuity to Life.
paconsulting.com

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Version: 1

Contents

1 Introduction

Hurricane Beryl initial formed on as a tropical depression on June 28, 2024, with winds of 35 mph; within the first 24 hours, the storm rapidly intensified into a hurricane with winds of 75 mph. In the following 24 hours, Beryl underwent another instance of rapid intensification becoming an extremely dangerous Category 4 hurricane. Hurricane Beryl made landfall near Matagorda, Texas early on Monday July 8, 2024, as a Category 1 hurricane, with wind gusts of up to 85+ mph. At the storm's peak, roughly 2.26 million customers within CenterPoint's Texas electric service territory lost power.

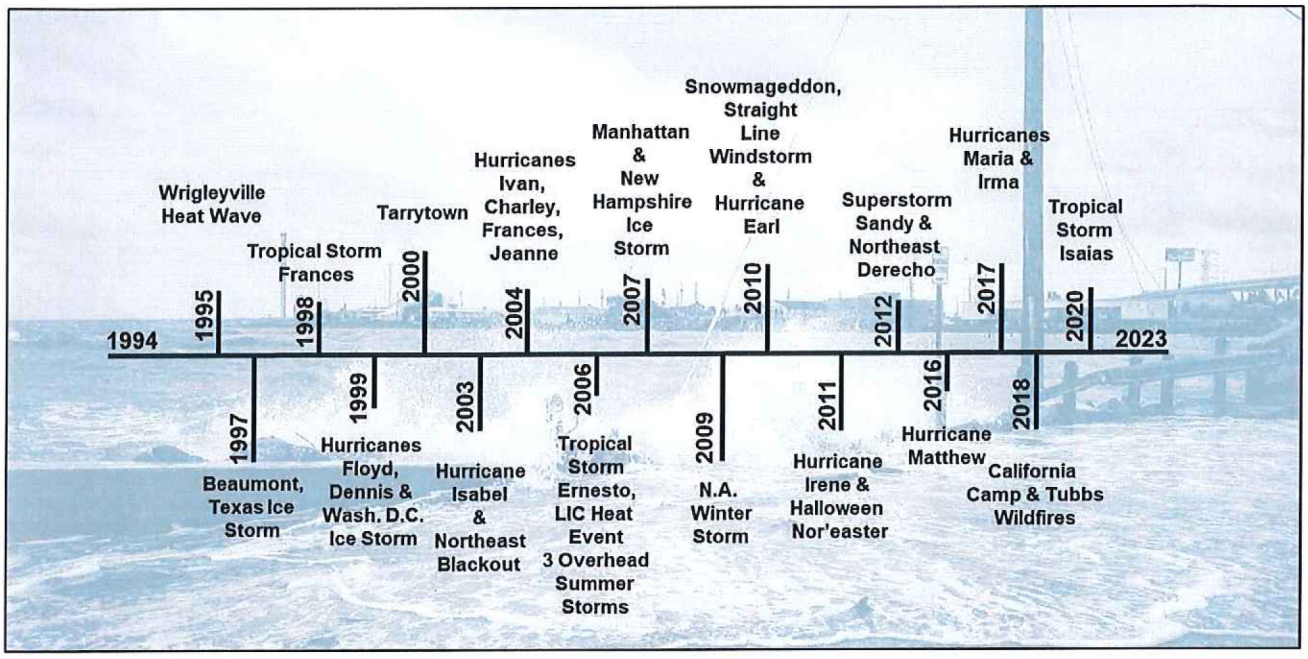
CenterPoint's storm preparedness and restoration efforts resulted some immediate successes. CenterPoint mobilized over 12,000 frontline resources between internal resources and mutual assistance and stood up 18 staging sites across the region. Once restoration efforts began, 1 million customers had their power back with 2 days of the storm's arrival. Transmission and substation assets remained largely undamaged, and the distribution system functioned according to its design. CenterPoint also experienced challenges during the storm restoration process. Critical system(s) utilized during a storm - not only for utility restoration but also for customer communication (e.g., outage maps) - did not perform up to expectations during this storm and has not worked since the May 2024 Houston derecho. Customers have expressed dissatisfaction how widespread the outages have been, in the accuracy of communication they received through the restoration process in addition to the perceived speed of restoration. Vegetation management has been identified as a potential area of concern, highlighted by significant tree damage indicating insufficient maintenance.

PA has extensive experience in post-storm assessments and reviews.

PA has conducted extensive post-major event reviews to establish timelines and sequences of events and restoration efforts, document key decisions, and prioritize opportunities for improvement. Our team understands each component that goes into the preparation, activation, and restoration of a major event. We bring best practices from other utilities and extensive knowledge of past improvement efforts, highlighting both successful and unsuccessful outcomes.

2 Our Experience

PA has over 30 years of assessing the annual reliability performance, customer communications, and restoration approaches of the most reliable utilities in the nation. We possess unparalleled insight into industry-leading practices and what excellence entails. The following visual illustrates our extensive experience in conducting post-mortem reviews of nearly every major storm and weather event in the U.S. from 1995 to the present day.



Below are selected engagements that showcase the team's extensive experience and capabilities.

Long Island Power Authority (LIPA): Isaias After Action Review and Hardening / Resiliency Review

Tropical Storm Isaias caused over 645,000 customer outages (over 50%) on Long Island. LIPA engaged PA to conduct an independent review of the response as well as Operations Technology system failures that occurred during the response. As a part of the Tropical Storm Isaias task force, PA specifically examined the circumstances around the failure of the Outage Management System (OMS), as well as how the OMS impacted customer communications systems as well as its downstream impacts to the overall restoration process. PA helped to identify the cause of the failures and presented our findings and recommendations in a 30-day, and 90-day reports.

PA was further engaged to help identify system hardening and resiliency improvement programs. Based on the restoration curves for Isaias and prior storm restoration efforts, PA helped transmission and distribution system hardening programs, selective undergrounding efforts, as well as restoration efficiency enhancements.

Long Island Power Authority (LIPA): Emergency Restoration Plan Improvement

PA has subsequently been engaged by LIPA to help streamline and improve the overall Emergency Restoration Plans (ERP) and associated ERP exercises. PA assisted in the development of a Concept of Operations to streamline, re-organize, and improve upon the clarity and organization of the existing ERP. PA is also contributing to the development of functional exercises to test the organization's ability to carry out the ERP.

Puerto Rico Electric Power Authority (PREPA): Hurricane Maria Damage Assessment & Restoration Leadership

In the aftermath of Hurricanes Irma and Maria, PA Consulting completed a comprehensive independent assessment of the damage done to PREPA's T&D system. This detailed assessment was used to quantify requests for Federal assistance, mutual aid resources, and financial liquidity support. Subsequently, Carlos Torres worked on behalf of the Edison Electric Institute to lead the months long industry-wide assistance efforts to restore the Puerto Rican grid.

Consolidated Edison Company of New York (CECONY): Major Event Response Improvement Plan

PA was engaged by Con Edison for a project to evaluate the root causes of outage response delays for large outage events on Con Edison's non-network system. The evaluation included a detailed analysis of some of the worst events on the system over a 4-year period to determine opportunities for improvement.

Lessons learned from these events were used to develop modified work practices to improve response times. Innovative work practices proposed included parallel dispatch of crews, automated call out of crews, shift overlap, contractor scheduling, and the deployment of generators.

Major Utility: After Action Analysis and Improvement Initiatives

Following Hurricane Floyd, PA assisted a major electric and gas utility evaluate the root causes for its extensive outages, restoration delays, and customer communications issues. Our analyses provided the foundation for the Company's regulatory response and the justification for numerous short- and longer-term emergency planning and response improvements. Our work also included the development decision support tools to use weather forecast and climate data to predict damage prospectively and development of system and damage incident specific Estimated Time of Restoration predictions. These tools became critical inputs to the management of future storms, informing all forms of customer communications to set and update restoration expectations and to inform pre-storm and post-storm foreign crew mobilization decisions.

Confidential Client: 2018 Camp and Tubbs Wildfire Investigations

PA was engaged to investigate the Camp and Tubbs Wildfires and help assess the causes and contributing factors to ignition sources. PA conducted field visits, examined sequence of events and climate conditions (e.g., wind speeds / directions), state of assets during the events, and reviewed applicable maintenance and inspection practices and records. Our work helped the clients better understand sequences of events, if the utility's standard of care was carried out, and what the implications on liability / likelihood of recovery would be using two defined standards.

3 Our Expertise

We are experts in major event readiness, response, and recovery efforts. Our team members have led major event (e.g., storm) responses as incident commanders, and have led numerous after-action reviews. In addition, the team has conducted independent third parties' after-action reviews to help utilities and stakeholders identify both short term and longer-term opportunities for improvement. These have ranged from better stress testing of key critical systems, to develop parallel restoration processes during major events, to targeted undergrounding and transmission system reinforcements needed. We are well versed in what is in the realm of possible, and what are the most impactful changes / updates needed.

PA also has extensive experience with outage communications and customer engagement strategy. We bring industry-leading practices to ensure impactful communication with customers during restoration events, focusing on the timing and content of messages. We understand the information customers seek and the messaging strategies and channels that effectively convey critical messages to resonate with them.

Derek HasBrouck – Partner in Charge and Utility Impacts Lead

Home office: Boston, MA

617-252-0163

derek.hasbrouck@paconsulting.com

Education & Certifications:

B.S. in Electrical Engineering

M.B.A.

Derek HasBrouck advises utility industry clients and investors on topics ranging from utility strategy to operations improvement. He is an expert in benchmarking electric and gas utility businesses, utility regulation, and network reliability. He has led several major utility business transformation programs, including a major process redesign of a leading investor-owned utilities' electric and gas metering operations.

Derek is a widely recognized industry leader in reliability and improvement strategies. He has created a number of benchmarking programs, including the ReliabilityOne® program in 1999 to establish industry best practices for reliability and restoration efforts. He most recently helped clients in Texas and New Mexico to assess reliability processes and develop a roadmap to further improve reliability performance.

Derek also served as the Chief Financial Officer of VT Transco as it raised and deployed $750M to construct new transmission lines throughout Vermont. He started his utility career at Florida Power & Light as a Distribution Construction and Maintenance Supervisor.

He earned his Master's of Management from the J.L. Kellogg School of Management at Northwestern University and his BS in Electrical Engineering from Rensselaer Polytechnic Institute.

Select Experience in Crisis & Emergency Management:

Long Island Power Authority: Partner in Charge of several electric reliability and service quality related oversight assignments, including OMS system metric verification and validation, OSA service quality metric benchmark review, distribution maintenance review, and benchmarking emergency preparation training and exercises. All these engagements involved working with PSEG LI staff to collect and analyze operational data to support the effective oversight of PSEG LI by LIPA.

Puerto Rico Electric Power Authority: Partner in Charge for the comprehensive, independent damage assessment of the PREPA T&D system following Hurricane Maria. Using a statistically based approach, we surveyed the entire Island to determine the full extent of physical damage to the T&D infrastructure in the month following the storm. This assessment provided the basis for Federal disaster relief requests, mutual aid requests, and temporary liquidity arrangements for this severely damaged – both physically and financially – public utility system.

Major Storm and other Catastrophic Event Reviews: Partner in Charge of numerous reviews of utility responses to major storms,

Derek HasBrouck – Partner in Charge and Utility Impacts Lead

including the 5 hurricanes that crossed Central Florida in 2004, Hurricane Maria in Puerto Rico and the US Virgin Islands, ice storms from Texas to New England, heat waves in Chicago, New York, and New Jersey, the 2003 Blackout, and wildfires in California. Reviews covered the operational aspects of utility systems and the restoration thereof, inbound, and outbound customer and stakeholder communications across all communications channels, and all the supporting work processes, systems, and technology infrastructure.

Michael Sullivan – Restoration & Resiliency Expert

Home office: New York, NY

212-499-3022

michael.sullivan@paconsulting.com

Education & Certifications:

B.S. Electrical Engineering & Technology

M.B.A. in Finance

Professional Engineering license

Mike Sullivan has over 35 years of broad utility leadership experience. First as a senior executive for Pepco Holdings, Inc. (now part of Exelon), he had responsibility for a 4,000-employee organization that included Electric and Gas Operations, Maintenance, Construction, Engineering, Customer Service, and Technology.

At PA, he has worked on several strategic and operational consulting engagements including an assessment of the Puerto Rican electric system following hurricane Maria and smart grid technology assessments. Mike is a thought leader in grid modernization, smart grid technologies, and customer benefits. His unique background includes generation, transmission, and distribution business segments as well as enterprise performance, grid modernization, customer experience, operational excellence, change management, and technology innovation.

Select Experience in Crisis & Emergency Management:

- At PHI, Mike was the Incident Command Leader for over 15 years leading the organization through many major storm restorations including Hurricanes Isabell, Irene, the mid-Atlantic Derecho and Hurricane Sandy.
- Through each of these events, Mike was charged with reporting to the PHI board and state regulators on "after action" investigations and lessons learned.
- Mike was responsible for the creation and continuous improvement of the ICS (Incident command system) leading the enterprise through not only major storm restorations but also a labor strike and the 2008 financial crisis.
- An early leader in the application of incident command system in the utility industry, he has worked on the creation of numerous drills with federal agencies in Washington D.C. as well as EEI (GridEx) for all types of events including storm restoration, cyber events, and physical attacks.
- As the Manager of System Operations at PHI, Mike was charged with designing and executing drills for control room personnel including tabletop exercises and field personnel.
- As PHI's representative on EEIs National Emergency Response Committee, Mike was deeply involved in redesigning the mutual assistance system following Hurricane Sandy.

Carlos Torres – Emergency Response / Preparedness Expert

Home office: Nazareth, PA
201-396-2743
torresca62@gmail.com

Education & Certifications:

B.S. Mechanical Engineering

M.S. Engineering Management

Carlos D. Torres has over 35 years of broad Utility leadership experience first as an executive for Consolidated Edison of New York, Incorporated (Con Ed) and then as an independent consultant.

Select Experience in Crisis & Emergency Management:

As an independent consultant, he has worked on several strategic and operational consulting engagements including being assigned by the Governor of Puerto Rico as the Power Restoration Coordinator for the restoration of Puerto Rico Electric Power Authority's transmission and distribution electric systems following Hurricanes Maria and Irma, development and implementation of a Business Continuity (or Continuity of Operations) Plan for EEI and evaluating / assessment of SCE's plans and procedure implementations during their annual full-scale exercise in 2018 and 2019.

At Con Ed (and Orange & Rockland Utilities), he served as the Vice President of Emergency Preparedness & Business Resiliency (EP&BR). During his over 32-year career at Con Ed, he also held numerous leadership and operational positions in electric, natural gas, steam, and construction operations throughout the company. In his role as Vice President of EP&BR, he was responsible for planning, implementing, and overseeing the company's emergency and crisis management, business continuity and pandemic planning activities. He was responsible for all aspects of designing, exercising, testing, and executing the Incident Command System (ICS). He served as incident commander for many responses as well as the Incident Management Assist Team (IMAT) member for the companies Incident Commanders during major, full-scale events and crises (role of the VP of EP&BR). He oversaw Con Edison's response to numerous weather events, including major storms (e.g., Superstorm Sandy and Hurricane Irene), and emergencies such as the 9/11 attacks and the 2003 Northeast Blackout. As the company's lead emergency response liaison, he worked closely with federal, state, and local agencies from both the response, coordination as well as from the emergency planning perspective through drilling and exercising (both joint, individually or observing/evaluation).

About PA.

We believe in the power of ingenuity to build a positive human future.

As strategies, technologies, and innovation collide, we create opportunity from complexity.

Our diverse teams of experts combine innovative thinking and breakthrough technologies to progress further, faster. Our clients adapt and transform, and together we achieve enduring results.

We are over 4,000 strategists, innovators, designers, consultants, digital experts, scientists, engineers, and technologists. And we have deep expertise in consumer and manufacturing, defense and security, energy and utilities, financial services, government and public services, health and life sciences, and transport.

Our teams operate globally from offices across the UK, Ireland, US, Nordics, and Netherlands.

PA. Bringing Ingenuity to Life.

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COMMITTEES AND BOARDS

Board Member, Ubicquia, Inc.

Board Member, University of Miami College of Engineering Advisory Board

Past Board Member, Board of Directors of the Southeastern Electric Exchange (SEE)

Past Board Member, Association of Edison Illuminating Companies (AEIC)

Past Board Member, Florida Reliability Coordinating Council (FRCC)

Board Member, Southeastern Electric Reliability Council (SERC)

Manny Miranda served as executive vice president of Power Delivery for Florida Power & Light Company (FPL) and the president of Florida City Gas (FCG). He was responsible for the planning, engineering, construction, maintenance and operations of the company's transmission, substation, and distribution facilities. In this role, he showed strong leadership skills and outstanding work ethic leading a workforce of over 6,000 employees and contractors. Mr. Miranda was named to this position in April 2013, and named President, Florida City Gas in 2022.

A 40-year veteran of FPL, Mr. Miranda joined the company in 1982, and throughout his tenure, played an integral role in driving growth and profitability, managing a combined capital and O&M budget of over $4 billion. Previously, Mr. Miranda served as vice president of Transmission & Substation, and before that, as vice president of distribution system performance, where he was responsible for FPL's Storm Secure initiative to substantially strengthen the distribution infrastructure against future hurricanes. Mr. Miranda held a variety of roles within the customer service and distribution areas of the business, including commercial and industrial manager and roles in engineering and dispatch operations.

Mr. Miranda was instrumental in delivering best-ever day-to-day operational improvements in reliability, customer service, employee engagement and safety. Through his leadership, the organization saw a 40% improvement in its reliability, resulting in being awarded the National Reliability One Award from PA Consulting the last seven out of nine years. His efforts led to increased customer satisfaction, decreasing customer complaints by 67%. His focus on employee engagement and safety created a positive work culture, resulting in increased employee morale and a 60% reduction in employee injuries.

Mr. Miranda's forward-thinking was a driving force behind changing the company's and industry's approach to hurricane resiliency. He developed groundbreaking solutions that significantly improved the organization's ability to withstand the impact of hurricanes, such as introducing the concept of hardening and embarking on a 20-year journey to harden the grid by 2025. Mr. Miranda led restoration efforts for 47 tropical storms and hurricanes from Hurricane Andrew to Hurricane Ian, two of the most devastating storms in the company's history. His expertise in the field and contributions toward hurricane preparedness are recognized industry-wide; having been awarded the Lifetime Achievement Award at the Florida Governor's Conference in 2019.

Mr. Miranda holds a Bachelor of Science degree in mechanical engineering from the University of Miami and a Master of Business Administration from Nova Southeastern University (NSU). He previously served on the Board of Governors for NSU's H. Wayne Huizenga School of Business and Entrepreneurship. Mr. Miranda has previously served as president of both the Southeastern Electric Exchange (SEE) and the Association of Edison Illuminating Companies (AEIC) boards.

Mr. Miranda has won numerous industry awards throughout his career, including the Lifetime Achievement Award from the Florida Governor's Conference, Association of Cuban Engineers Engineer of the Year Award, the Alumnus of Distinction Award from the University of Miami College of Engineering and University of Miami Iron Arrow member.

Frank Billingsley

Chief Meteorologist

Frank Billingsley has been forecasting every kind of weather in Houston since 1989. From devastating hurricanes to tornado outbreaks to deep freezes to flooding of biblical proportions, Frank has been there to see Houstonians through the worst and best of weather times.

Frank was named a "Houston Treasure" in 2018 and a "Houston Legend" by Houston City Book in 2021. Frank's career includes Best Weathercaster awards from the Associated Press, the Houston Press Club, the Houston Press Newspaper and the Dallas Press Club. In 2020, Frank became an honorary Admiral in the Texas Navy, the highest honor the governor of Texas can bestow on a citizen for community service.

Besides his meteorological expertise, Frank has also become a champion of men's health through sharing his own experience of prostate cancer and has advocated for adoptees in his book Swabbed & Found: An Adopted Man's Journey to Discover His Family Tree (Bright Sky Press, 2017).

Out of Frank's many accolades, his favorite recognition comes from the Houston Chronicle which named Frank the "Ultimate Weatherman."

Wes Moorehead, Associate Director of Forest Resource Protection and Fire Chief at Texas A&M Forest Service, provides oversight for the agency's emergency response and preparedness functions. He began his career with the agency in 2001 and has served in various positions, including Regional Forester, East Texas Operations Department Head and Assistant Director. Moorehead is a graduate of the Forest Management program at Stephen F. Austin University as well as the Harvard Kennedy School Senior Executives in State and Local Government Program. He is a Certified and Accredited Forester and has previously been appointed to the Board of Directors for the Texas Forestry Association. In 2020, Moorehead was the recipient of a Texas A&M University System Regents Fellow Service Award.

Boston Consulting Group is a global consulting firm that partners with leaders in business and society to tackle their most important challenges and capture their greatest opportunities. Our success depends on a spirit of deep collaboration and a global community of diverse individuals determined to make the world and each other better every day.

Who We Are

BCG was the pioneer in business strategy when it was founded in 1963. Today, we work closely with clients to embrace a transformational approach aimed at benefiting all stakeholders—empowering organizations to grow, build sustainable competitive advantage, and drive positive societal impact. Our diverse, global teams are passionate about unlocking potential and making change happen, delivering integrated solutions through leading-edge management consulting, technology and design, and corporate and digital ventures.

Our Expertise

Our experts bring deep industry and functional expertise and a range of perspectives that question the status quo and spark change. We work in a uniquely collaborative model across the firm and throughout all levels of the client organization, fueled by the goal of helping our clients thrive and enabling them to make the world a better place.

Bent Ear Solutions Emergency Management Team

Craig Fugate

Senior Executive Advisor

Professional Summary

Craig Fugate began his career as a firefighter and paramedic, served as a county emergency manager and in 2001 was appointed by Governor Jeb Bush to be the Director of Florida Division of Emergency Management. In 2004, Fugate managed the largest Federal disaster response in Florida history as four major hurricanes - Charley, Frances, Ivan and Jeanne - impacted the state in quick succession. In 2005, Florida was again impacted by major disasters when three more hurricanes - Dennis, Katrina, and Wilma - made landfall in the state. Under Fugate's stewardship, Florida's emergency management program became the first statewide program in the Nation to receive full accreditation from the Emergency Management Accreditation Program.

In 2009 Craig was confirmed as the FEMA Administrator, serving both terms of President Obama's administration, and coordinating the federal response to an unprecedented number of natural disasters. He oversaw the Federal Government's response to major events such as the Joplin and Moore Tornadoes, Hurricane Sandy, Hurricane Matthew, and the 2016 Louisiana flooding. Additionally, Fugate set a clear and compelling vision and priorities for FEMA and relentlessly focused the Agency to achieve better outcomes for survivors. FEMA's effectiveness in dealing with more than 500 Presidentially declared major disasters and emergencies restored the faith of the American people in the Federal Government's ability to respond to disasters.

Since leaving public service, Craig has leveraged his lifelong passion and commitment to the integration of technology to emergency operations, working with several start-ups as well as government and business enterprises. He has focused extensively on emerging technologies that provide predictive impact analytics and those systems that ensure coordinated and efficient responses. He is widely regarded as a premier subject matter expert on emergency management and regularly advises Fortune 100 companies' executive leadership as well as governments around the world. Craig serves on the Board of Pacific Gas & Electric, provides guidance to several technology firms in the risk and crisis management space, and serves as an Executive Advisor to Bent Ear Solutions' partners across the nation.

THE HAWTHORN GROUP, L.C.

ALEXANDRIA, VIRGINIA

Founded in 1992, Hawthorn is an international public affairs firm based in Alexandria, Virginia, with a unique -- among Washington agencies -- "beyond the Beltway" focus on STATE public affairs.

Building on its principals' seminal role in developing grassroots organizations for political campaigns, Hawthorn now specializes in creating and mobilizing com- munity support - through the media, social media, coalitions, GrassTops and grassroots - to influence public affairs issues.

Active across a broad section of heavily regulated industries - consumer products, education, finance, gaming, and healthcare - Hawthorn is best known as the premier public affairs firm in the electric utility industry. Hawthorn is frequently called in to public affairs and communications crisis situations. Crisis clients have ranged from BP, to American Water, to Procter & Gamble.

John Ashford serves as Chairman and CEO and lead strategist of Hawthorn. Drawing on communications and public affairs expertise gained in hundreds of successful candidate and corporate campaigns, Ashford provides senior counsel to Hawthorn clients across the country and around the world.

In addition to Ashford, Hawthorn's team includes Tim Fitzpatrick, Bryant Kinney, Sloan Rappoport, Charlie Perkins and Matt Hirsch (a partner at Vianovo).

Tim Fitzpatrick has deep expertise in all aspects of reputation management, crisis communications, and stakeholder engagement, having spent nearly four decades helping senior executives in the energy, chemicals, telecommunications and technology industries successfully navigate unique challenges. Most recently, Fitzpatrick served as the chief marketing and communications officer for NextEra Energy and PG&E. Earlier, he held leadership roles with BASF, Ameritech and Lexmark.

Bryant Kinney has more than 35 years of experience in industry public and government affairs, media relations, crisis communications and philanthropic strategy. A veteran executive at Duke Energy which spanned more than two decades, Kinney oversaw communications and public affairs for the company's regulated utility as well as the development of commercial energy projects in 20 states and Europe, Asia-Pacific and Latin America. Prior to Duke, he served as manager, power generation communications for Tennessee Valley Authority, responsible for all public and media relations and crisis communications for the federal power agency's nuclear, fossil and hydro-electric generation facilities.

Earlier, he served as director of emergency management services for Cherokee County, N.C. as well as an emergency response planner for the N.C. Division of Emergency Management.

Matt Hirsch has worked for more than a decade at the highest levels of state government and on presidential, U.S. Senate and gubernatorial campaigns across the country. Having held communications roles at every level, Matt has a keen understanding of how to navigate the media landscape and how to approach and respond to difficult situations. Before joining Vianovo, he spent seven years as a top communications political and policy adviser to Texas Governor Greg Abbott, handling all aspects of the governor's messaging, press relations and media strategy. As the Deputy Chief of Staff and Communications Director for the governor, Matt oversaw the successful public response to some of the most challenging state disasters and crises, including Hurricane Harvey, the Sutherland Springs shooting, and more. In addition to his deep experience in crisis communications, Matt has worked extensively on developing short and long-term communications campaigns with a focus on achieving positive earned media coverage.

HAGERTY

OUR STORY

Hagerty Consulting is an emergency management consulting firm that helps clients prepare for, respond to, and recover from disasters. Established in 2001 and incorporated in July 2002, Hagerty's work includes some of the nation's largest recovery projects, including 9/11, Hurricane Katrina, Hurricane Sandy, Hurricane Irma, Hurricane Michael, and the Camp Fire (among other major disasters). Our professionals have further supported disaster preparedness and response across the nation, including major **preparedness initiatives for the federal government** and 45 different response and recovery missions associated with the **Novel Coronavirus (COVID-19) Pandemic.** The firm is (and has been) consistently recognized throughout the industry for its innovative thinking, client-centric service, and the superior results it delivers to every project. Hagerty professionals reside across the United States in all 10 Federal Emergency Management Agency (FEMA) regions. Our corporate headquarters is in Evanston, Illinois and we have offices across **the nation**.

OUR VALUES

Here at Hagerty, we truly believe the difference is our people — a diverse group of professionals from all walks of life and backgrounds. Our collaborative, inclusive work environment respects and leverages various, unique perspectives which creates an engine for innovation that drives the success of our clients.

As a firm, we value **integrity, innovation, teamwork, and excellence**.

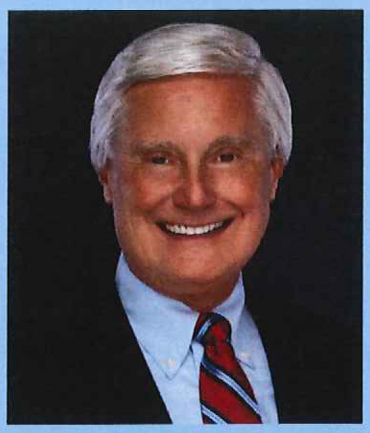
- **Integrity:** providing complete, sustainable solutions for those we serve;
- **Innovation:** finding creative solutions to meet our clients' mission and propel their organization forward;
- **Teamwork:** leveraging talent and expertise to arrive at the best possible outcome; and
- **Excellence:** driving to deliver excellent results — communication is key and quality counts.

CURRICULUM VITAE

Nelson G. Bingel III

Subject Matter Expert
Expert Witness
NESC Code Expert
Electric & Telecom Overhead Lines
Utility structures
Wood, Steel, Concrete, Fiberglass
Original Structure Strength
Wood Decay and Steel Deterioration
Inspection Techniques
Remaining Strength Analysis
Structure Loading Analysis
Clearance Analysis
Third Party Attachments
Industry Best Practices

February 2022



Marital Status: **Happily Married**
Date of Birth: **9/13/1951**
Place of Birth: **Buffalo, NY**
Business: **Near Atlanta, GA**
Nelson Research, LLC
207 Marcie Ct.
Senoia, GA 30276
(678) 850-1461
nbingel@nelsonresearch.net

Chairman
National Electrical Safety Code
The premier safety standard for overhead and underground electric and telecom lines

Vice Chairman
Accredited Standards Committee O5
Publishing standards for the manufacture of wood poles and crossarms

Other Technical Society Participation

IEEE – *Institute of Electrical and Electronics Engineers*

ASCE – *American Society of Civil Engineers*

AWPA – *American Wood Protection Association*

Education

Purdue University (1969-1973)
BS Mechanical Engineering

CURRICULUM VITAE

Work History

Nelson Research, LLC (2017- Present)
President
Consultant/Expert Witness – Overhead Electric & Telecom Lines

Osmose Utilities Services, Inc. (1987 – 2017)
Osmose is the largest provider of utility structure inspection, maintenance, and restore/repair services in North America, including the acquisition of Provincial Pole in Canada. Nelson had a 30-year career researching, developing, and testing instruments, products and methods for inspection, analysis, maintenance and repair or restoration of wood, steel, concrete and fiberglass utility structures. He received five US Patents; two for wood pole inspection and three for unique designs of restoration systems.

Lincoln Electric Company (1973 – 1985)
Lincoln Electric is the world leader in arc welding equipment and consumable products. After completing a 9-month sales engineering training program and becoming a certified welder through the Lincoln Welding School, Nelson spent 10 years in the sales organization working to find better solutions for the design and manufacturing process of customer's products.

Some of the applications were at seven US Steel plants, a Bethlehem Shipyard, Port of Oakland Loading/Unloading structures, skyscraper erection in San Francisco with companies like Kiewit, Fluor, Bechtel and others, and large oil and fuel storage tank fabrication with Chicago Bridge and Iron.

Patents obtained while with Osmose

June 27, 2000
US Patent 6,079,165: Apparatus and method for bracing vertical structures

April 29, 2008
US Patent 7,363,752 B2: Pole Reinforcement Truss

August 26, 2008
US Patent 7,415,808 B2: Pole Reinforcement Truss

January 16, 2018
US Patent 9,869,622: Automated profiling of the hardness of wood

March 3, 2020
US Patent 10,578,532: Automated profiling of the hardness of wood

Products developed while with Osmose

1987

Re-design of existing **Osmo-C-Truss** wood pole restoration system. Steel truss design was optimized for efficiency in correlating with the requirements of the National Electrical Safety Code.

1999/2010

O-Calc®/O-Calc Pro™- Comprehensive Pole Loading Software

Software used by Osmose and companies across the country to model in-service utility poles and evaluate loading per the National Electrical Safety Code or GO 95 in California.

2000

C2-Truss™ - Wood Pole Restoration System – 3 Patents Awarded

This unique, computer-aided design enabled using very high strength steel to produce steel trusses for restoring wood poles that are lighter, stronger and lower in cost.

2005

StrengthCalc® - Electronic Wood Pole Strength Calculator

This software tool provides greatly enhanced precision for determining the remaining strength of in-service wood poles that have some level of deterioration in the zones just below and above the groundline. StrengthCalc is utilized during inspection of millions of wood poles annually and helps insure proper classification of their condition for optimum asset management.

2006

LoadCalc® - Electronic Pole Loading Estimating Tool

This software tool enables users to estimate the loading of in-service poles as a low-cost screening tool that can be incorporated with regular pole inspection programs. This can save a majority of poles from requiring a comprehensive pole loading analysis which incurs a is significantly higher cost.

Industry Association Activities

National Electrical Safety Code (NESC) – the standard that establishes safety requirements for the construction, operation and maintenance of overhead and underground electrical and communication lines.

NESC Main Committee

Chairman: Aug 2016 forward

NESC Strength & Loading Subcommittee

Chairman: 2009 – 2016

Member: 1990 – 2016

NESC Main Committee

Member: 2009 – present

NESC Executive Subcommittee

Member: 2013 – present

American Standards Committee O5 (ASC O5) – this committee publishes standards for the manufacturing of wood poles and crossarms.

Vice Chairman: 2021 - present

Chairman: 2006 – 2021

Member: 1990 - present

ASC O5 Fiber Strength Subcommittee

Chairman: 1998 – 2015

Member: 1990 - present

American Society of Civil Engineers (ASCE)

Member: 1996 - present

Co-Author **ASCE Manual No. 141, Recommended Practice for the Design and Use of Wood Pole Structures for Electrical Transmission Lines** (Published 2019)

Co-author of **ASCE Manual No. 111, Reliability-based Design of Utility Pole Structures** published by Structural Engineering Institute of ASCE (Published 2006)

Co-author of **ASCE Manual No. 104, Fiber-Reinforced Polymer Products for Overhead Utility Line Structures**; the Structural Engineering Institute of ASCE (Published 2003)

Institute of Electrical and Electronics Engineers (IEEE)

Overhead Lines Working Group on the NESC

Vice-Chair: 2017 – present; Chairman: 1996 – 2017; Member: 1988 – present

Overhead Lines Joint Use Working Group

Vice-Chair: 2020 – present

Co-Author – **IEEE Joint Use Guide for Wireless Facilities** – will publish in 2022

American Wood Protection Association (AWPA) – publishes standards for preservative treatment of all wood groups, including wood poles.

Member: 1988 - present

Articles, Manuals, Publications

1994 Electric Perspectives Magazine – Nov/Dec – Edison Electric Institute
"Restore, Don't Replace"

1998 Wood Design Focus

- A Journal of Contemporary Wood Engineering; Forest Products Society
"Computer-Aided Design of Fiber Composite Wraps for Wood Pole Restoration"

2003 – *Manual of Recommended Practice for Fiber-Reinforced Polymer Products for Overhead Line Structures*; Edited by Jim Davidson; ASCE MOP-104

2006 – *Manual of Practice for Reliability-Based Design of Utility Pole Structures*; Edited by Habib Dagher; ASCE MOP-111
2007 – *Transmission and Distribution World Magazine*
"Extreme Winds Test Wood Pole Strength"

2016 – *Electric Energy Online*
"Guest Editorial | 2017 Revisions and Review Underway to the National Electrical Safety Code (NESC)"

2016- *Energy Central*
"Highlights, Changes and New User Elements of the 2017 National Electrical Safety Code

2017 – *Power Grid International*
"The Pole Express
– Road to System Resiliency Varies, but all Benefit from Taking a Closer Look"

2017 – *Natural Gas & Electricity*
"Wood Pole Strength & Loading - Key to Resiliency, Require Programs"

Conference Presentations

1999 Utility Pole Structures Conference – Reno, NV –
Northwest Public Power Association (NWPPA), Western Electric Power Institute (WEPI) Utility Structure Conference
"Proposed Code Changes: American Standards Committee O5/National Electrical Safety Code"

2000 Northeast Utility Pole Conference – October 17-18, Binghamton, NY
"Product Design in the new Electric Utility Environment"

2000 American Society of Civil Engineers (ASCE) Structures Congress – Philadelphia, PA
"Code Issues and Applications for Fiber Reinforced Composite Utility Poles"

2000 International Conference on Utility Line Structures – March 20-22, Ft. Collins, CO
"Product Design in the New Electric Utility Environment"

2000 Southern Pressure Treaters Association (SPTA) Winter Conference – January, 23-25, Key Largo, FL
"Update on ANSI O5.1 New Wood Pole Standard"

2000 Geospatial Information and Technology Association (GITA) Conference
"Utility Pole GIS Data Systems"

2001 Power Transmission & Distribution Asset Management Conference – Oct 27-28, Atlanta, GA
"Building a Data Strategy to Improve Reliability Planning"

2001 Institute of Electrical and Electronics Engineers (IEEE) Transmission and Distribution Conference – October 28-November 1, Atlanta, GA
"2002 National Electrical Safety Code (NESC) Update"

2001 National Joint Use Educational Conference – October 22-23, Phoenix, AZ
"2002 National Electrical Safety Code (NESC) Update"

2001 Southeast Electrical Exchange (SEE) Joint Use Committee Meeting – March 4-6, Orlando, FL
"Utility Pole Strength and Loading for Joint Use Applications"

2001 Edison Electric Institute (EEI) Transmission Committee Meeting – October 7-10
"2002 National Electrical Safety Code (NESC) Update"

2001 Western Energy Institute (WEI) Overhead Electric Distribution Workshop –Sep 10-12
"2002 National Electrical Safety Code (NESC) Update"

2002 Southeast Electrical Exchange (SEE) Joint Use Committee Meeting – May 19-21, Atlanta, GA
"Options for Overloaded Poles"

2002 Northeast Utility Structure Conference – October 22-23, Binghamton, NY
"Update on ANSI O5.1 – New Wood Pole Specification"

2002 SBC/Ameritech Technical Training Symposium - Chicago, IL
"Utility Pole Loading and Clearances"

2003 Southeastern Electric Exchange (SEE) Annual Conference – June 11-13
"Transmission Structure Asset Management"

2003 Northwest Public Power Association (NWPPA) Utility Structure Conference - Reno
"ANSI O5.1-2002 – The Inside Story", "2002 NESC Update"

2005 Western Electric Institute (WEI) Utility Pole Conference, October 26-27, Reno, NV
"Code Update: ANSI O5.1-2005, Upcoming NESC 2007"

2005 Institute of Electrical and Electronics Engineers (IEEE) Winter Power Meeting – Jan 23-25, Albuquerque, NM
"NESC and ANSI O5 Overview"

2006 International Conference on Overhead Lines – March 27-31, Ft. Collins, CO
"Code Update: NESC and ANSI O5"

2006 Edison Electric Institute (EEI) Transmission, Distribution & Metering Conference – April 2-5, Houston, TX
"Code Update: NESC and ANSI O5"

2006 American Wood Preservers' Association (AWPA) 102nd Annual Meeting – April 9-12, Austin, TX
"Code Update: NESC and ANSI O5"

2006 Florida Public Service Commission Workshop – April 17, Tallahassee, FL
"Wood Pole Strength & Loading"

2006 Municipal Electric Authority of Georgia (MEAG) – October 6, Cordele, GA
"Breakthroughs in Steel Restoration Truss Design"

2006 Northeast Utility Pole Conference – October 24-25, Binghamton, NY
"Code Update: NESC and ANSI O5"

2007 Institute of Electrical and Electronics Engineers (IEEE) Towers, Poles and Conductors Panel Session – Orlando, FL, January 9
"Significant Rejected Change Proposals to the 2007 NESC"

2007 Southeastern Utility Pole Conference – February 11-13, Tunica, MS
"ANSI & NESC – What's New for Your Poles"

2007 Florida Electric Cooperatives Association (FECA) Engineers Conference – May 30-June 1, Clearwater, FL
"New Technology – Managing Wood Pole Strength and Load"

2007 Western Electric Institute (WEI) Utility Pole Conference – Oct 10-11, Vancouver, WA
"ANSI & NESC Update"

2008 International Conference on Overhead Lines – March 31-April 3, Ft. Collins, CO
"Code Updates – ANSI O5 & NESC"

2008 Northeast Utility Pole Conference – October 22-23, Binghamton, NY
"Steel and Concrete Utility Structure Corrosion"

2010 Utility Reliability Conference – February 10, Columbus, OH
"Reliability from the Ground Up"

2010 International Overhead Utility Conference, March 29-April 1, Ft. Collins, CO
"Code Update – ANSI O5.1 & NESC Safety"

2011 Eastern Utility Pole Conference – October 18-19, Baltimore, MD
"ASC O5 Committee – Wood Poles, Crossarms, Laminated Poles" – "NESC Update"

2012 International Overhead Utility Conference, March 28-April1, Ft. Collins, CO
"NESC Update"

2012 Spring Heartland Joint Use Conference – May 9-10, Pittsburgh, PA
"ANSI / NESC Code Review"

2012 Fall Heartland Joint Use Conference – October 24-25, Dayton, OH
"ANSI/NESC Code Review"

2016 National Electrical Safety Code (NESC) Workshop: Changes for the Future - October 18-19, 2016, San Antonio, TX
Workshop Host and Presenter