

# Winter Storm Elliott Update

*Dave Ball*  
*VP, Energy Delivery Operations*

**APPALACHIAN  
POWER**

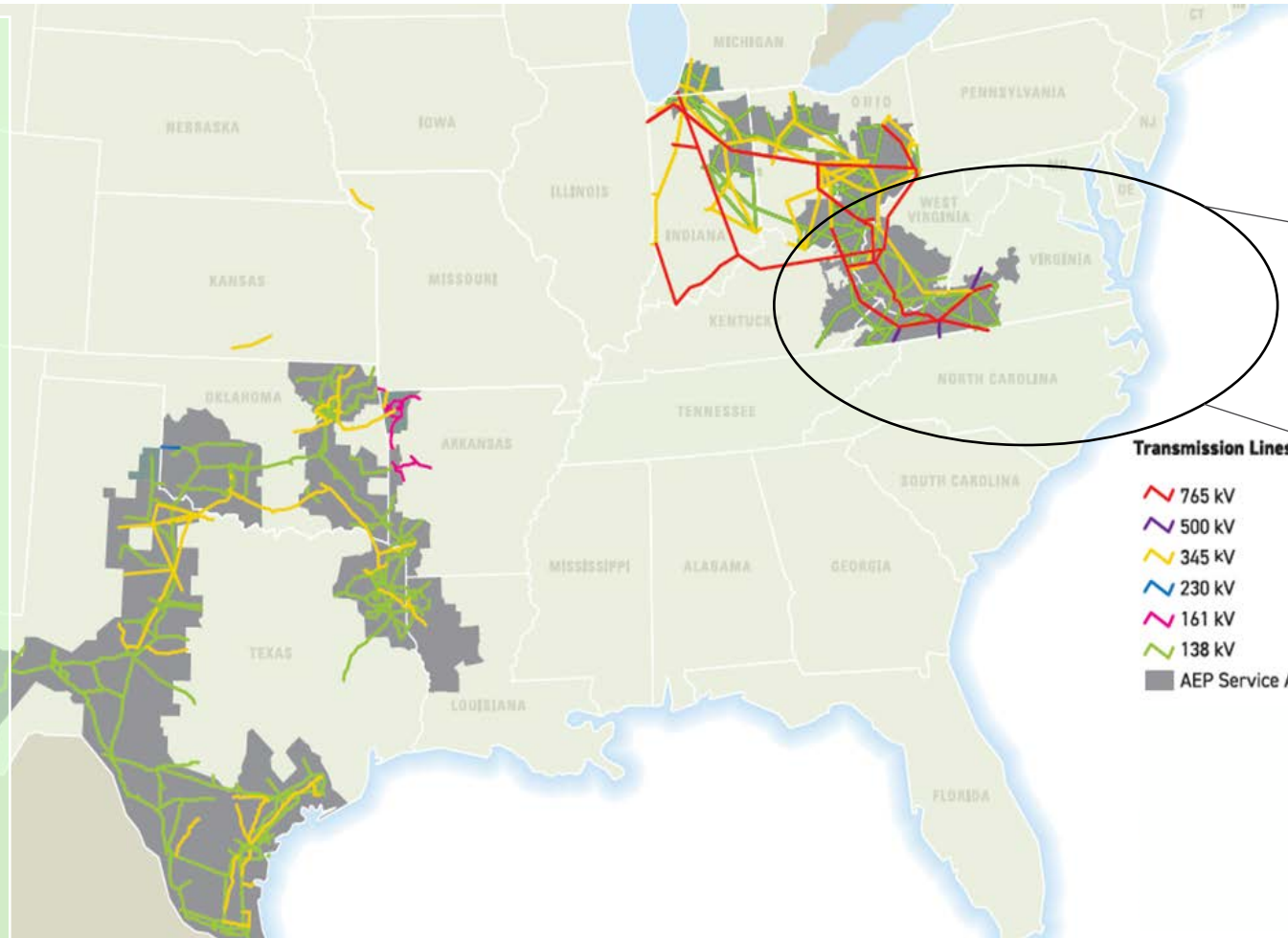
An **AEP** Company

January 2023

# AEP and Appalachian Power Overview

## About AEP

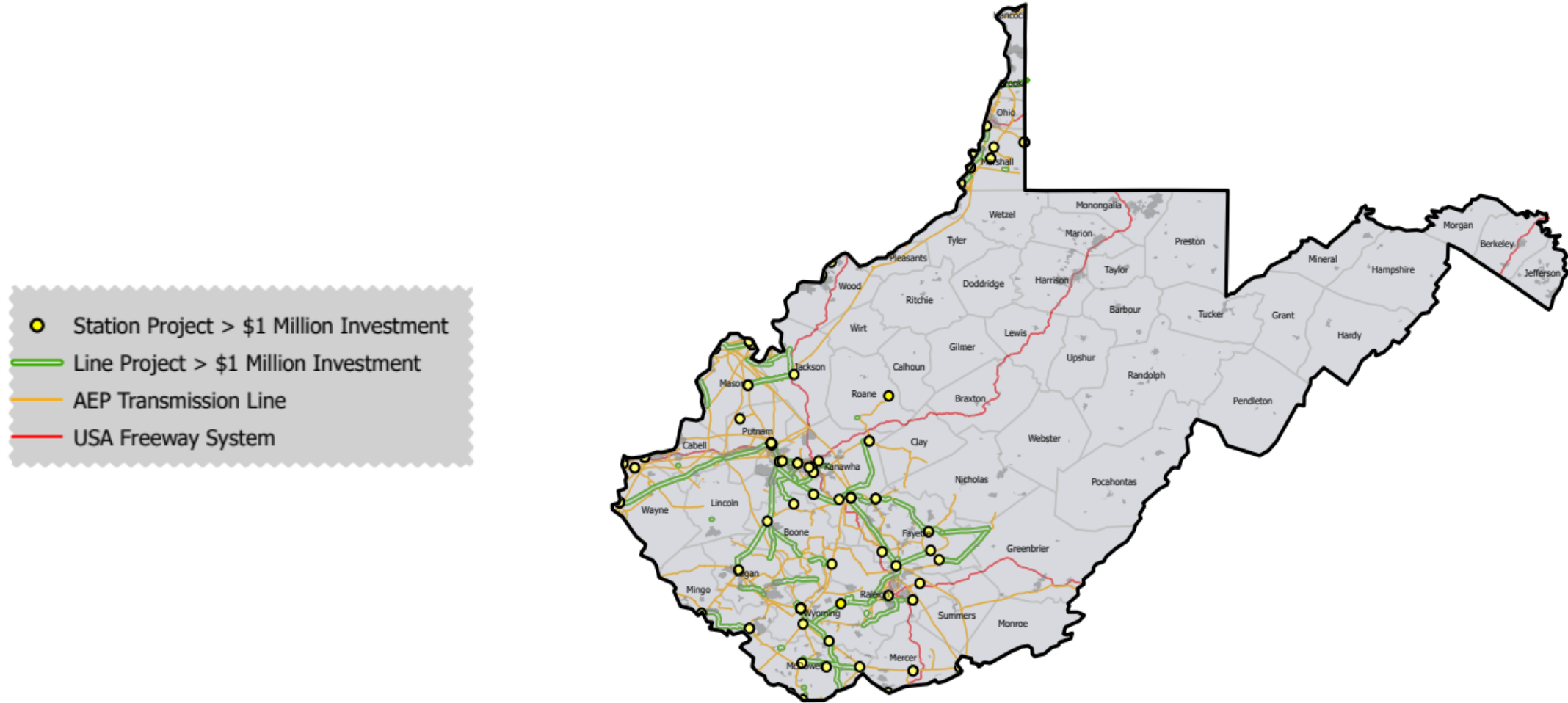
- 5.5 Million Customers in 11 States
- 16,800 Employees
- The Largest Transmission Owner in North America with more than 40,000 Miles of Transmission Lines
- Transmission Assets in PJM, SPP, MISO and ERCOT
- 223,000 Miles of Distribution Lines
- 30,000 MW of Generating Capacity



**Appalachian Power's  
Service Territory**

# Investing in West Virginia's Transmission Grid

*Transmission projects totaling more than \$2.3 billion completed since 2012 to benefit West Virginia customers*





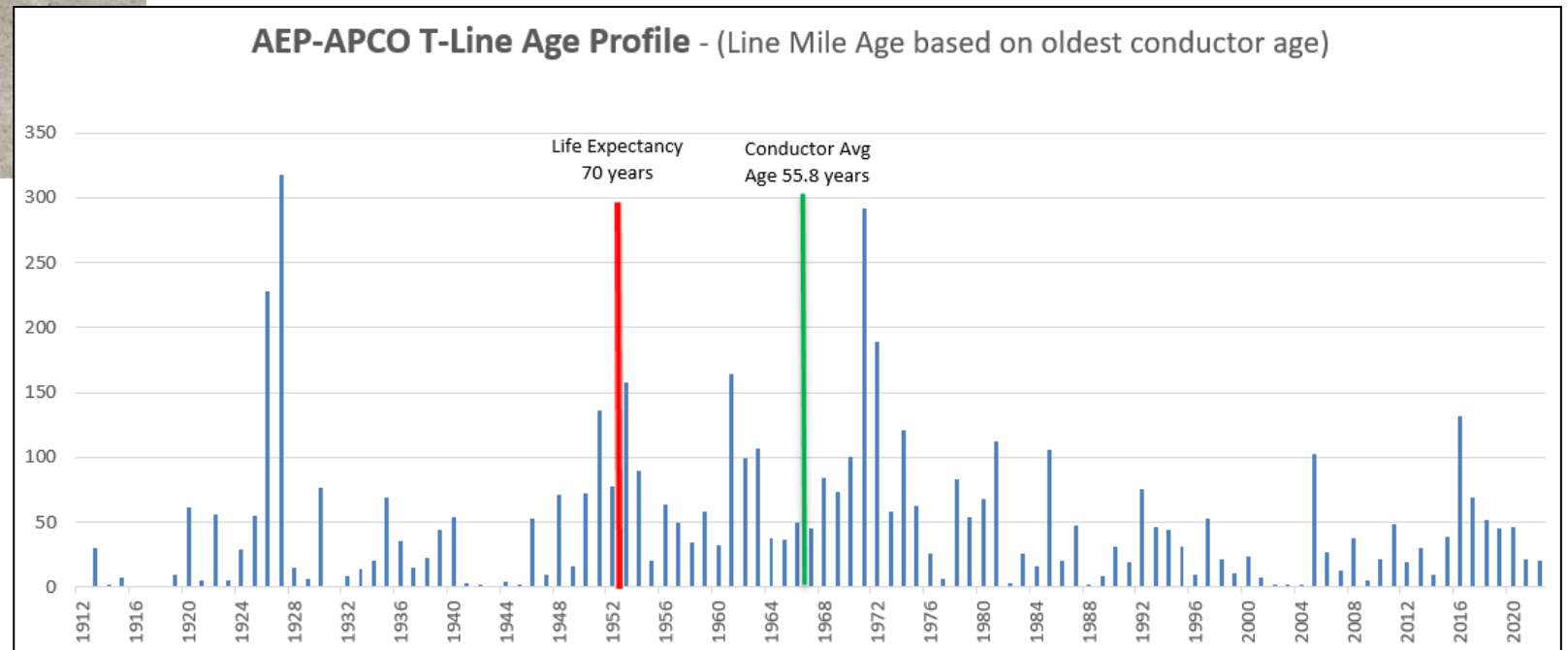
# Modernizing West Virginia's Infrastructure



AEP Archives – 1925  
Backfilling crew on tower construction on the  
Philo-Canton transmission line in Ohio

Photo of AEP line installation in 1925. Many such facilities remain in service today.

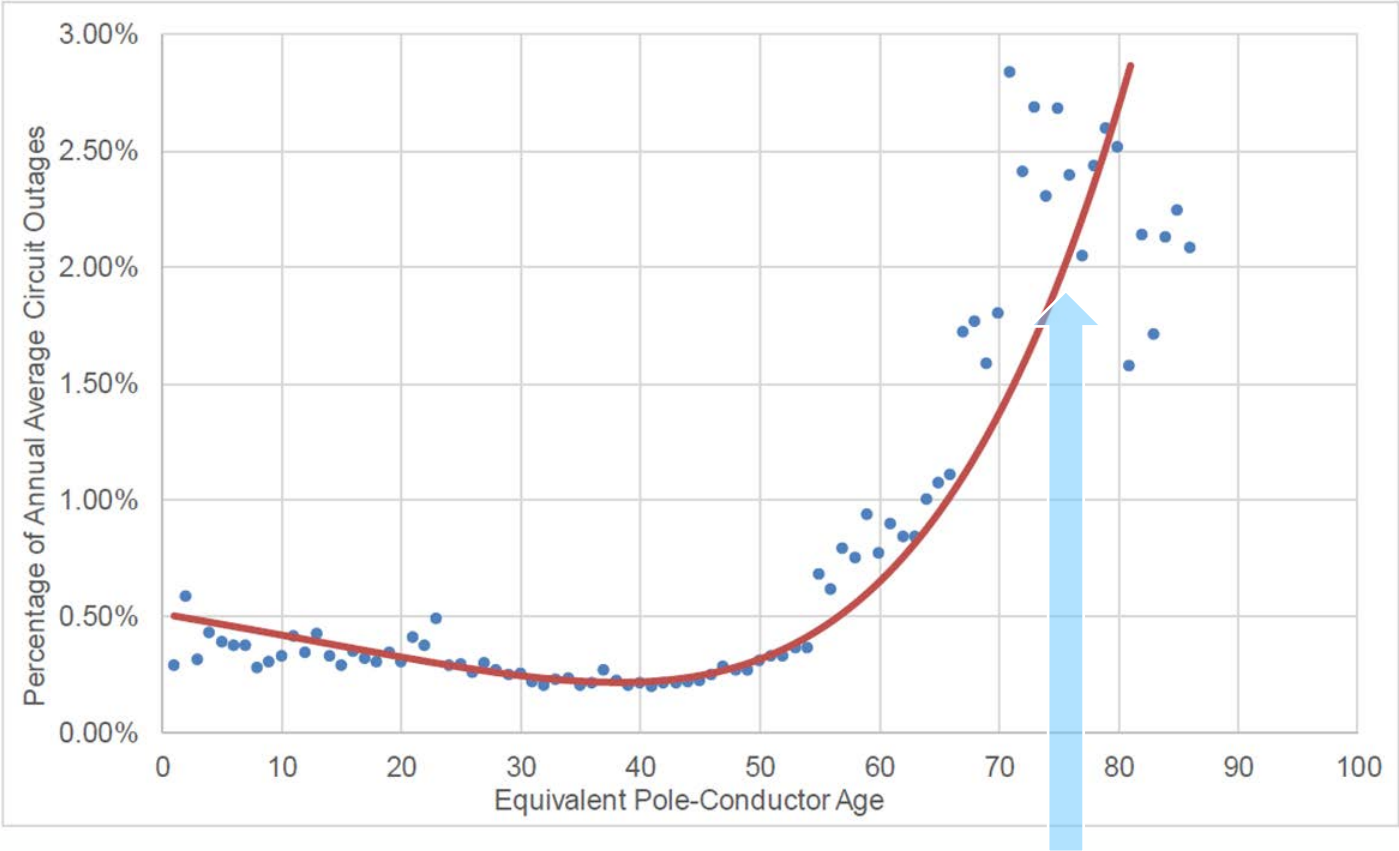
**MILEAGE**



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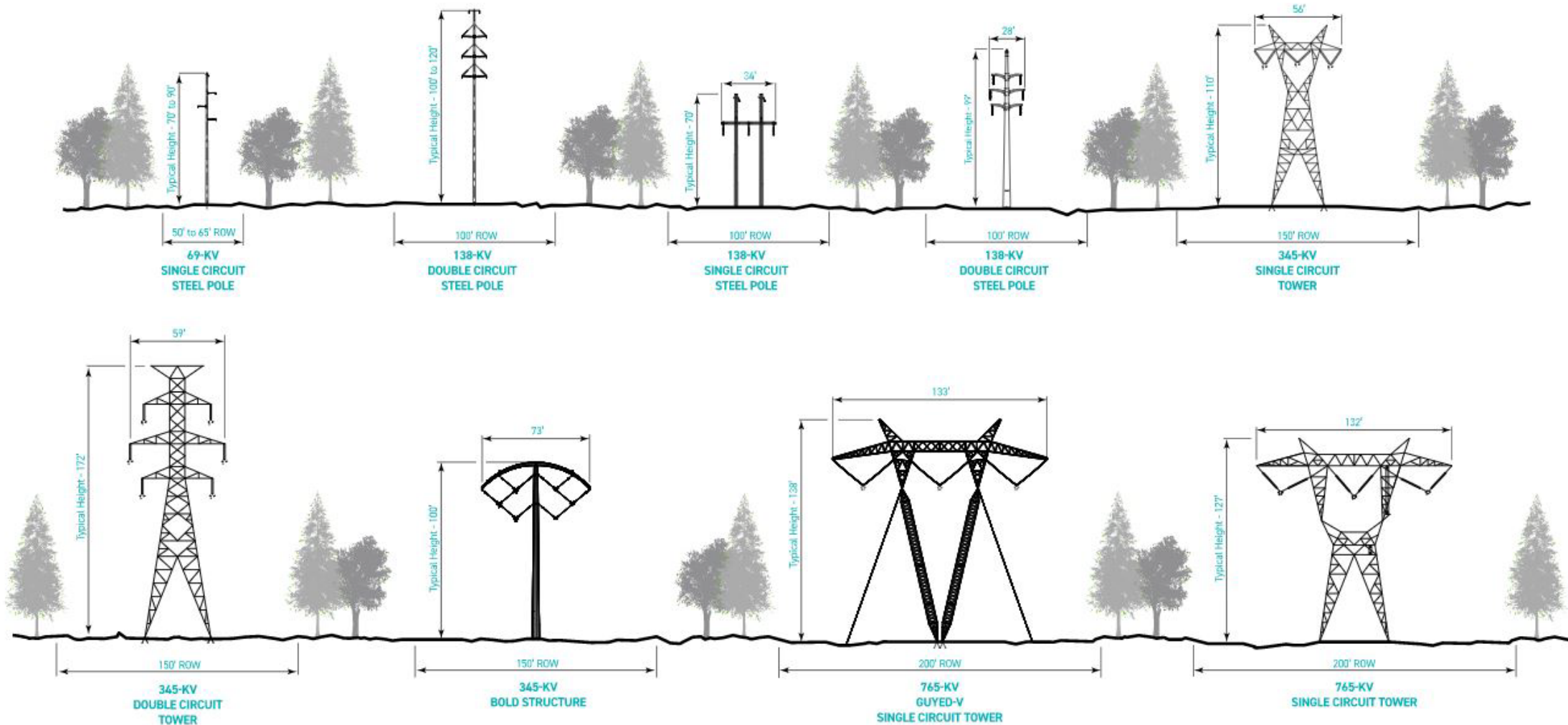
# Reliability & Resilience Benefits of Transmission Investment

Relationship Between Asset Age and Outages



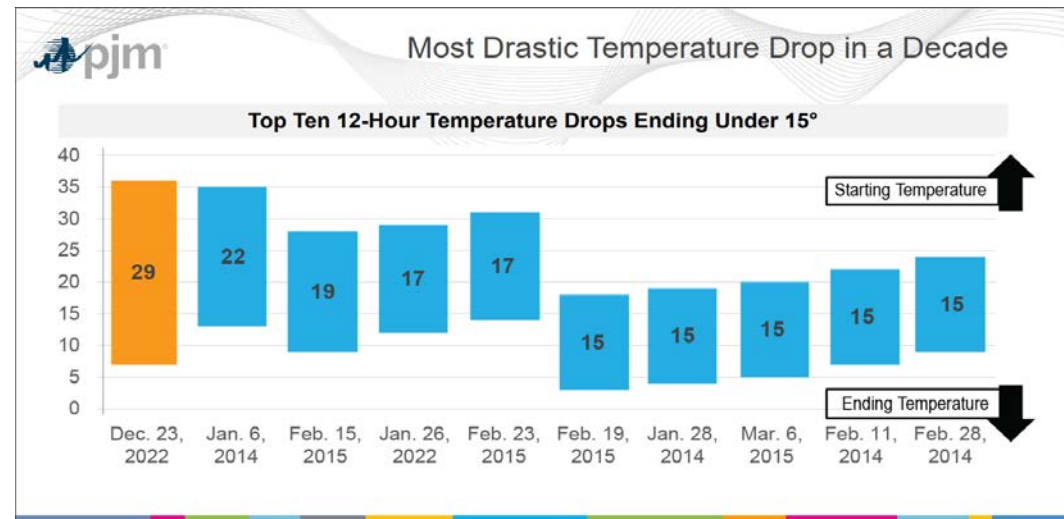
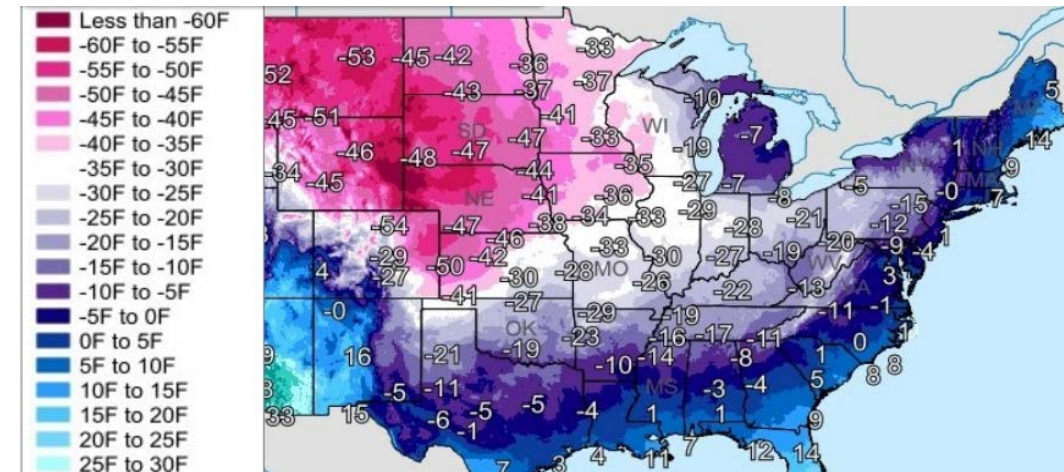
**Analysis shows the risk of equipment failure at 75 years of age is around 8 times greater than the risk of failure at age 40.**

# Typical Transmission Structures



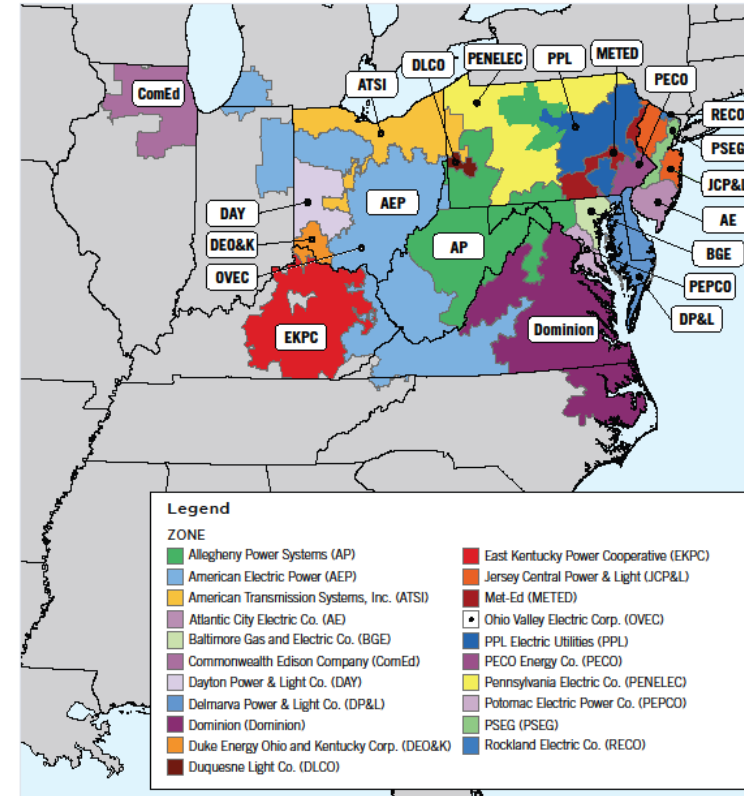
# Winter Storm Elliott

- Elliott impacted much of the Midwest and Northeast with high winds and heavy snow, followed by extreme low temperatures as far south as Texas and Florida.
- Temperatures across PJM plummeted from Dec. 23 through the morning of Dec. 25, with record lows in some areas and record drops in some regions.
- Cold weather alerts were issued by the PJM, ERCOT and SPP regional transmission organizations (RTOs) for December 21-26, 2022.



# Winter Storm Elliott Impacts in PJM

- Actual load (electricity demand) was 10% higher than PJM forecast.
- Holiday weekend load was an extreme outlier in magnitude and timing over a 10-year period.
- Load remained unusually high overnight on Dec. 24 (40,000 MW higher than average peak demand).
- Significant portion of generation failed when PJM called on reserves.



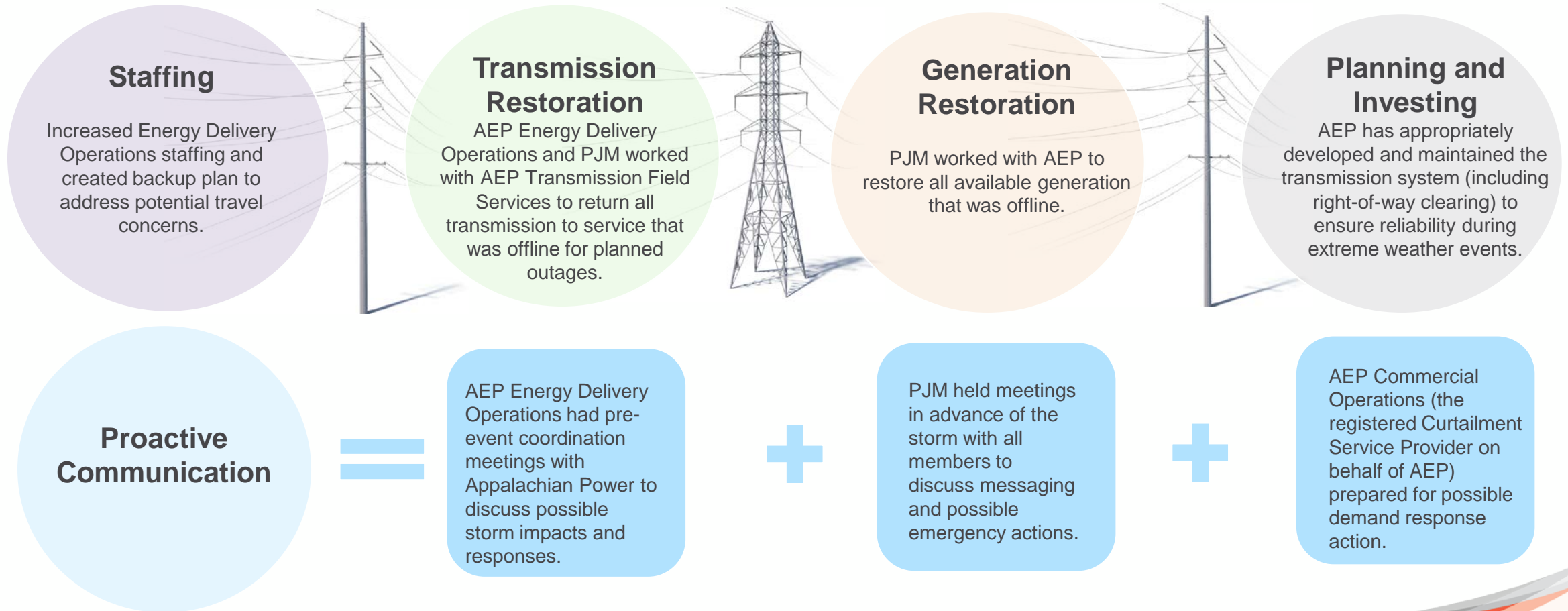


# AEP's System Performance During Elliott: Successfully Moving Generation

## AEP's System Performed Extremely Well During Elliott:

*No AEP transmission outages during the storm directly impacted generation capacity delivery*

### Appropriate preparation helped to ensure success:



# Actions Taken During Emergency Events

## Levels defined\* by NERC EOP-011-1

<b>Energy Emergency Alert (EEA) Level 1</b>	<b>All available generation resources in use</b> <ul style="list-style-type: none"><li>• All generation is committed, and there is concern about maintaining required reserves for BA</li><li>• Non-firm wholesale energy sales curtailed.</li></ul>
<b>EEA Level 2</b>	<b>Load management procedures in effect</b> <ul style="list-style-type: none"><li>• BA is no longer able to provide its expected energy requirements and is energy deficient</li><li>• Operating plan implemented, including public appeals and demand response</li><li>• BA is still able to maintain minimum reserves</li><li>• Market participants and other BAs notified</li><li>• Transmission limitations evaluated and revised</li><li>• BA makes use of all available resources</li></ul>
<b>EEA Level 3</b>	<b>Firm load interruption imminent or in progress</b> <ul style="list-style-type: none"><li>• BA is unable to meet minimum contingency reserve requirements</li><li>• System &amp; reliability limits reevaluated and revised</li><li>• Immediate action taken to mitigate undue risk to the Interconnection, including load shedding.</li></ul>

