MANGANA HEIN
TRANSMISSION IMPROVEMENTS PROJECT

AEP TEXAS℠
An AEP Company

Welcome! Thank you for visiting our virtual open house to learn more about the project and share your input to help us develop project plans. We welcome feedback through the project website, phone, email and mail as we strive to make the most informed decisions possible.

The virtual open house includes details on the following information:

- Project Need & Benefits
- Project Map
- Routing Process
- Engineering
- Right-of-Way Practices
- The Construction Process
- Vegetation Management

PROJECT NEED & BENEFITS

The project involves:

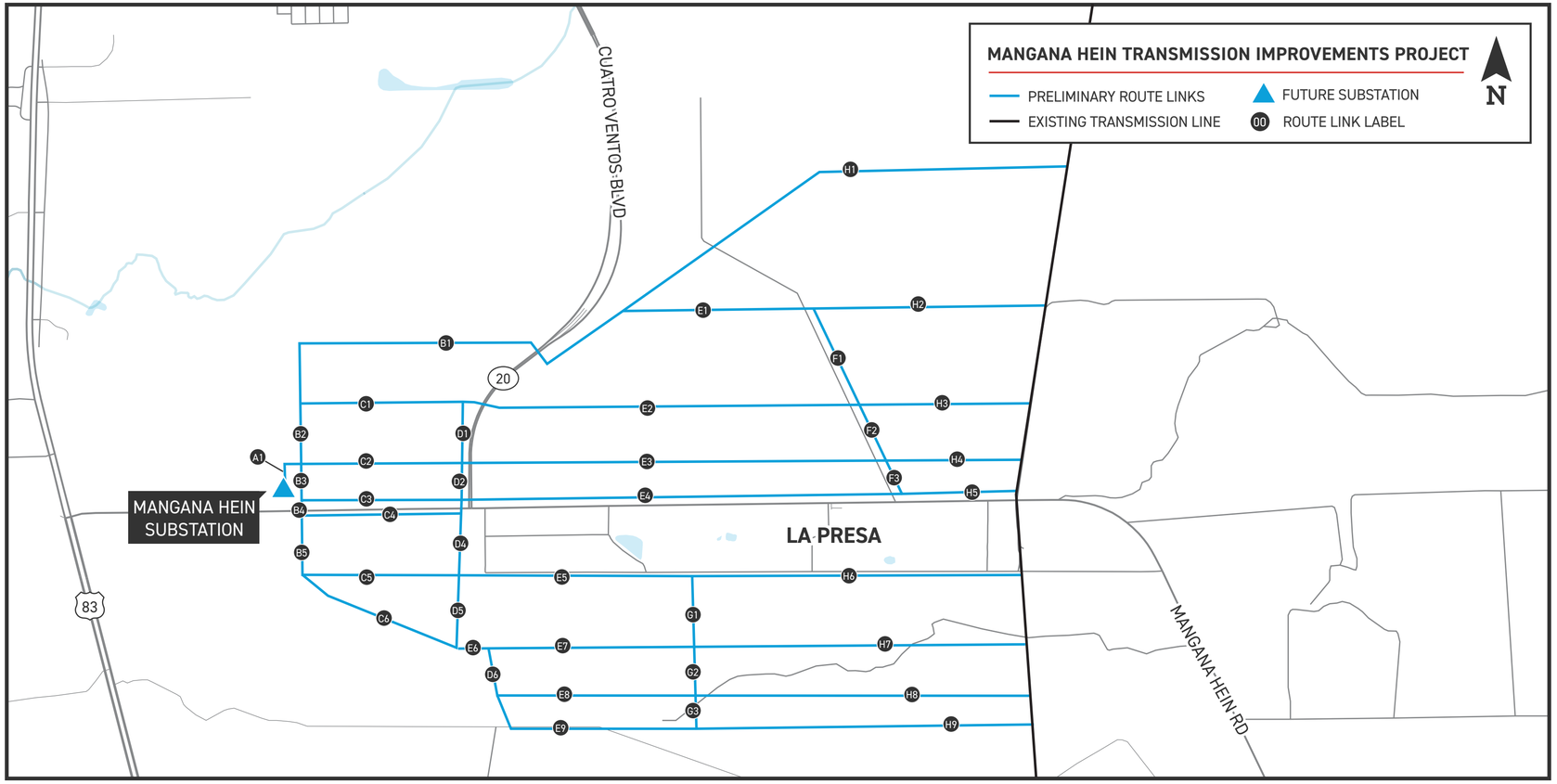
Building approximately 2 miles of new double-circuit 138-kV transmission line that connects to the new Mangana Hein Substation to the existing Rio Bravo - Wormser transmission line.

Why is the project important to our community?

IMPROVED RELIABILITY
Adding a new 138-kilovolt double-circuit transmission line to the area enhances the region's electric service reliability and resiliency.

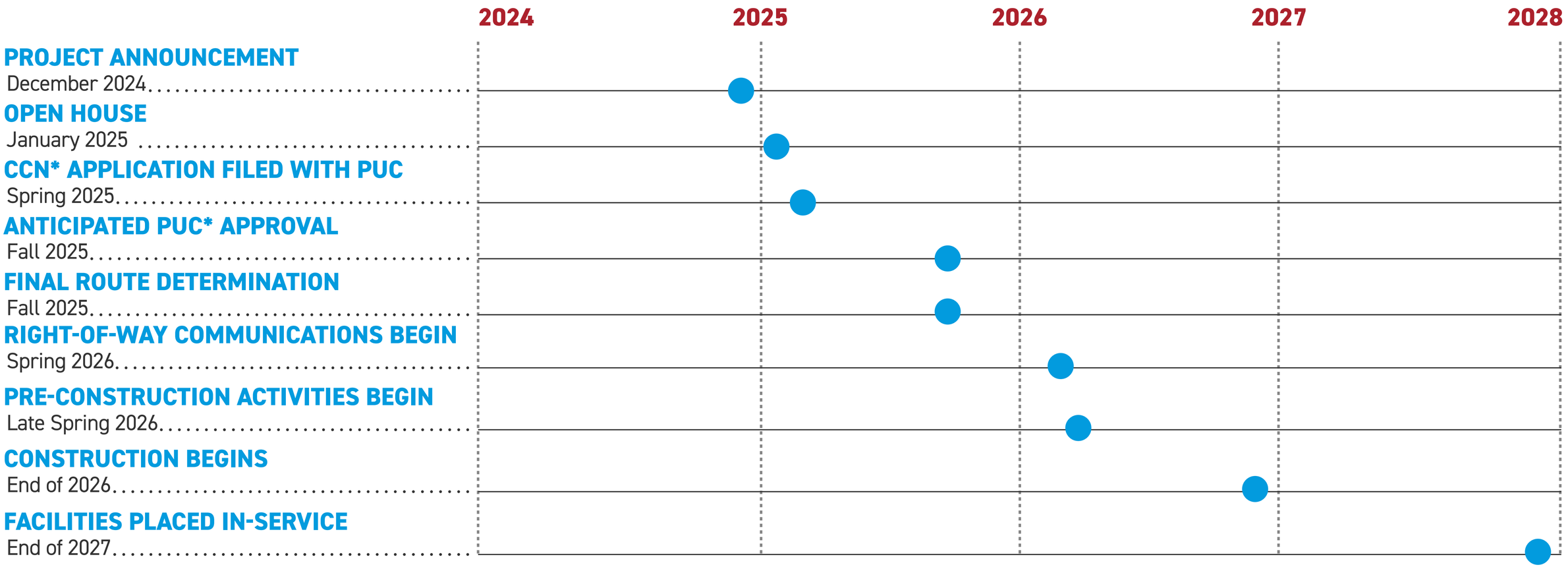
STRENGTHENS LOCAL GRID
The proposed project modernizes the electric system to allow more flexibility to address the area's growing power demand and ensures reliable power, reducing the likelihood and duration of outages for area customers.

PROJECT MAP


MANGANA HEIN TRANSMISSION IMPROVEMENTS PROJECT
PRELIMINARY ROUTE LINKS
EXISTING TRANSMISSION LINE
FUTURE SUBSTATION
00 ROUTE LINK LABEL
N
CUATRO VENTOS BLVD
MANGANA HEIN SUBSTATION
LA PRESA
MANGANA HEIN RD
20
83
A1
B1
B2
B3
B4
B5
C1
C2
C3
C4
C5
C6
D1
D2
D4
D5
D6
E1
E2
E3
E4
E5
E6
E7
E8
E9
F1
F2
F3
G1
G2
G3
H1
H2
H3
H4
H5
H6
H7
H8
H9

PROJECT TIMELINE

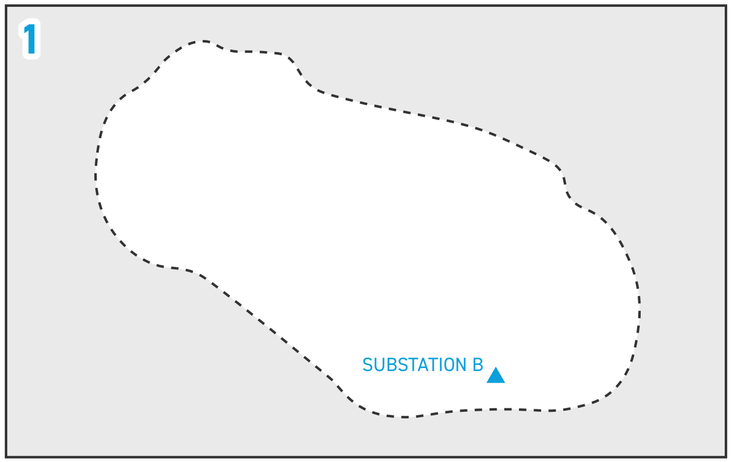
AEP TEXAS
An AEP Company



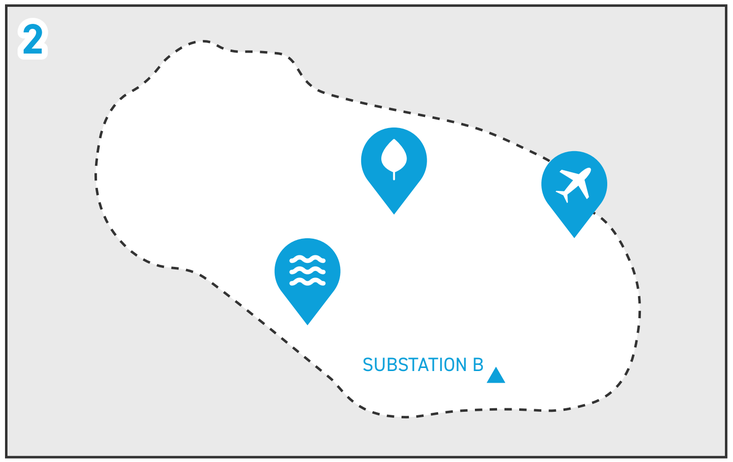
*CCN: Certificate of Convenience and Necessity, PUC: Public Utility Commission of Texas
**Timeline Subject to Change

ROUTING PROCESS

We implement a comprehensive routing process that takes land use, the environment, public input and engineering guidelines into account to develop a transmission line route. The information below illustrates each stage of the routing process.

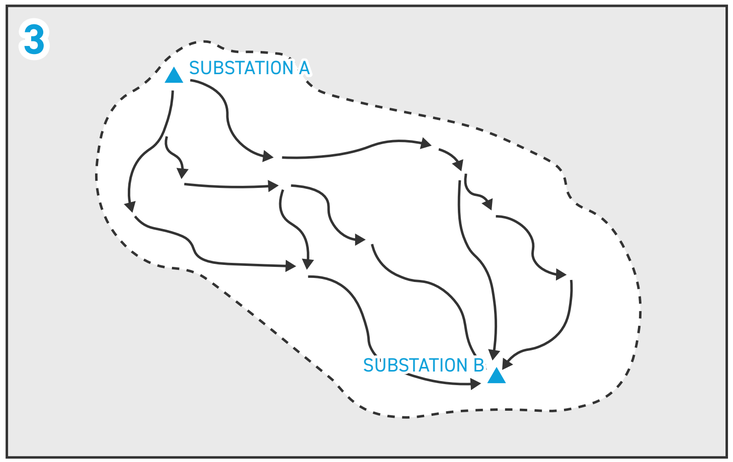


1. Study Area: Develop a study area for the project that incorporates both end points of the power line and the area between.

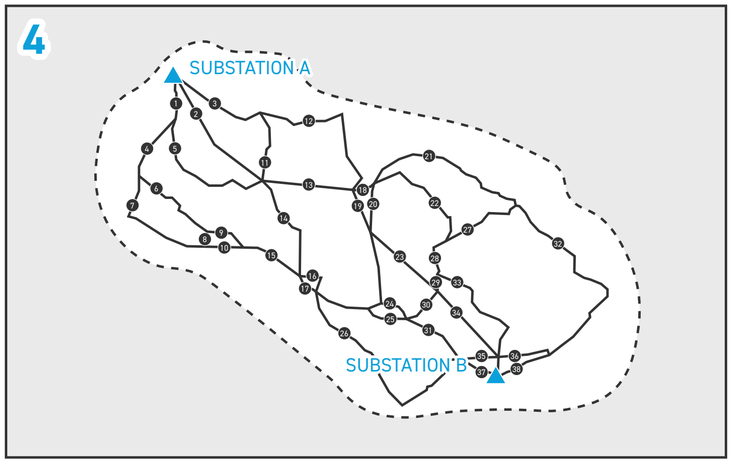


2. Information Gathering: Data is gathered for the defined study area including environmental, land use, historic and cultural resources, existing infrastructure and sensitive areas.

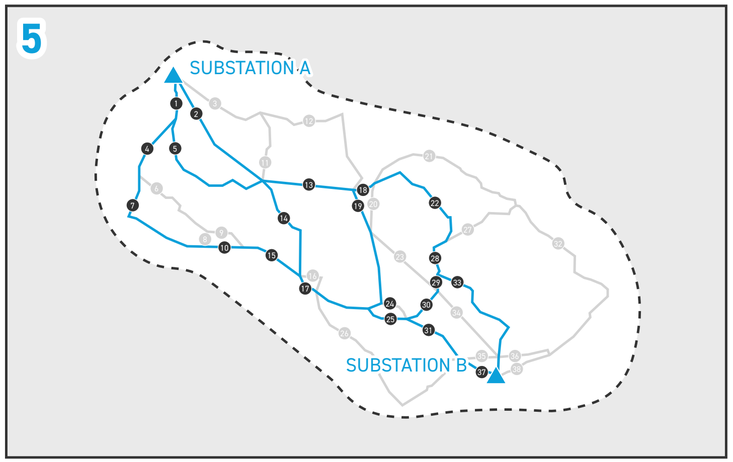
ROUTING PROCESS



3. Conceptual Routes: The routing team uses data gathered to develop conceptual routes adhering to a series of general routing and technical guidelines.

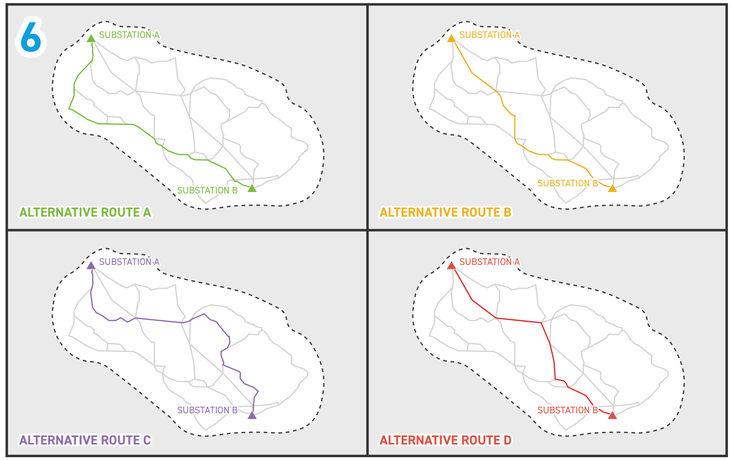


4. Study Segments: Study Segments are derived from conceptual routes. Study segments are formed between two common points of intersection. Together, the collection of study segments is referred to as the study segment network.

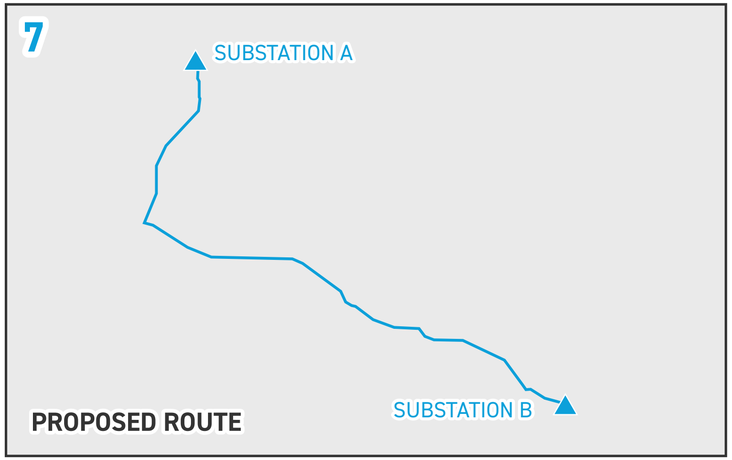


5. Refined Study Segments: As more information is gathered, the study segments are refined. Some study segments are eliminated or modified, leaving the refined study segments for further consideration.

ROUTING PROCESS



6. Alternative Routes: After public input is gathered, study segments are further refined and evaluated. The most suitable segments are selected and assembled into alternative route options.



7. Proposed Route: Alternative routes are assessed, and a proposed route is chosen. The proposed route minimizes impact to the community and environment, while considering cost, line length, and design requirements.

ROUTING CONSIDERATIONS

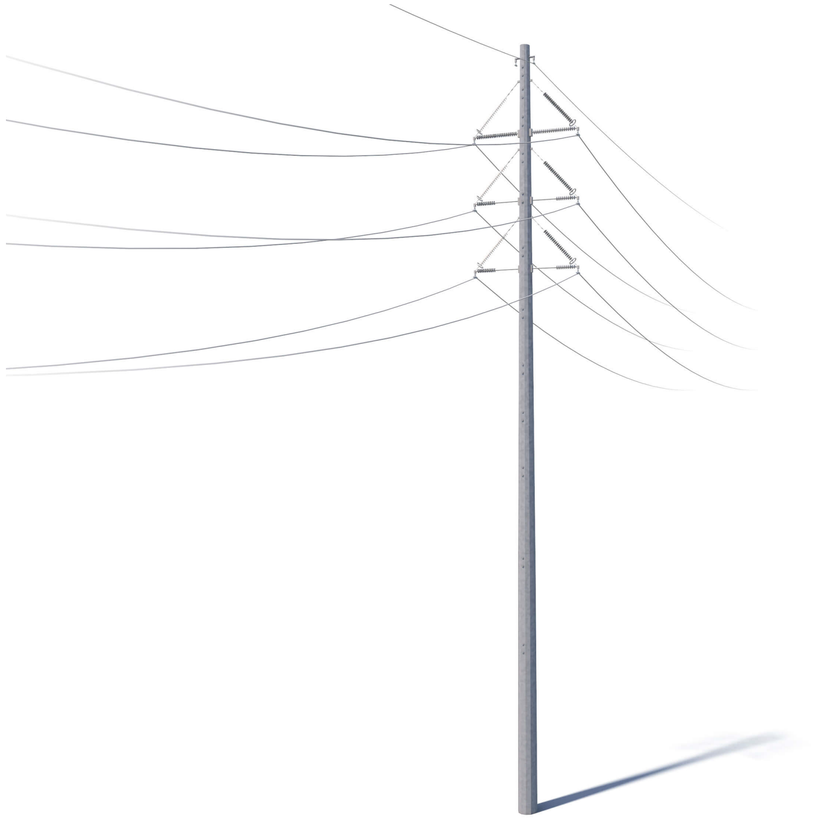
We aim to build transmission lines that power communities and the economy while minimizing community and environmental impacts.

Our project teams review a variety of environmental factors including:

- Current and proposed public and private land uses
- Aesthetics and visual impacts
- Water quality, including potential impacts on wetlands, streams and water bodies
- Wildlife, vegetation and fisheries, including threatened and endangered species
- Soils and geology
- Community and neighborhood growth and development
- Historic and archaeological sites
- Existing Infrastructure, such as power lines, roads, railroads, pipelines and renewables
- Environmental & Social Justice Impacts

We identify and comply with all required local, state and federal permitting agencies.

TYPICAL STRUCTURE

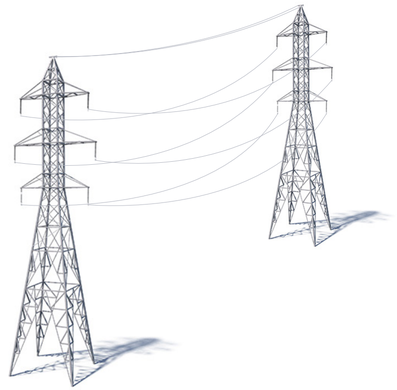


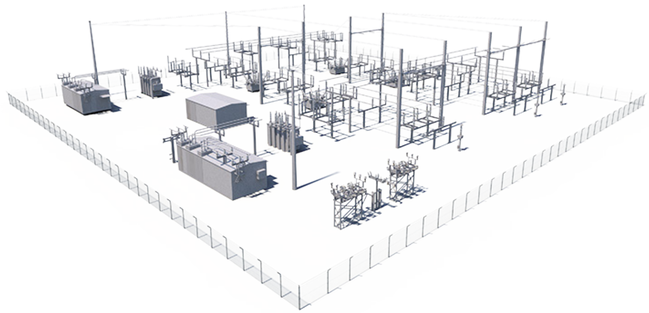
AEP Texas plans to install single steel poles for this project.

Typical Structure Height: Approximately 90 feet*
Typical Distance Between Structures: Approximately 550 feet*
Typical Right-of-Way Width: Approximately 100 feet*

HOW THE SYSTEM WORKS

AEP TEXAS
An AEP Company



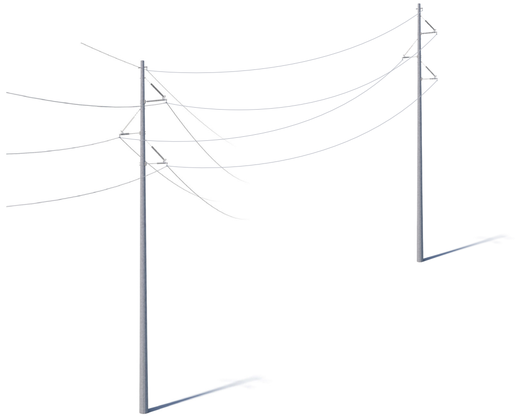


1. Generation Stations:
A generation station produces power to be transported long distances through transmission lines.

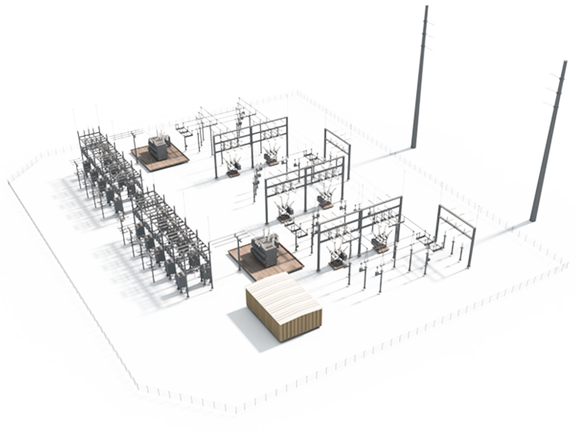
2. EHV Transmission:
Extra-high voltage (EHV) electric transmission lines are generally 765-kilovolt (kV), 500-kV and 345-kV.

3. Transmission Substations:
Substations direct the flow of electricity and either decrease or increase voltage levels for transport.

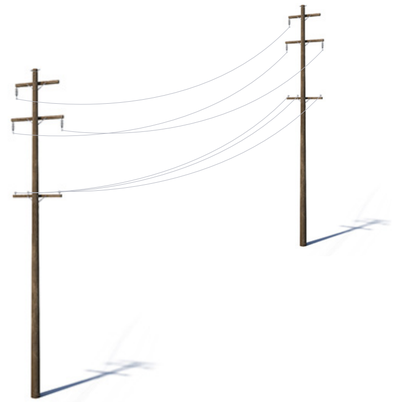
HOW THE SYSTEM WORKS



4. Local Transmission:
We typically use 69-kV and 138-kV transmission lines to move power shorter distances – for example, to different parts of a city or county.

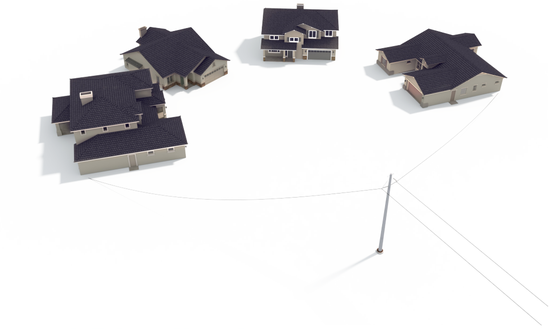


5. Distribution Substations:
Substations transform 69-kV and 138-kV electricity into lower distribution-level voltages such as 34.5-kV, 12-kV, or 7.2-kV.

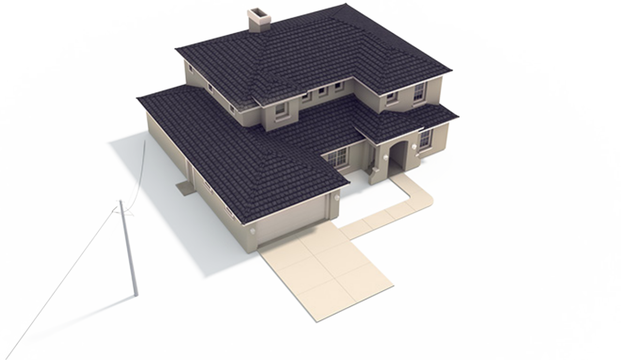


6. Primary Distribution:
These main lines (also called circuits) connect substations to large parts of the community.

HOW THE SYSTEM WORKS



7. Lateral Distribution:
These lower-capacity lines deliver electricity to neighborhoods and other smaller groups of customers.



8. Individual Service:
Smaller transformers step down voltage to levels customers can use. Individual homes typically use 120/240 volts.

To use an analogy, electric transmission is like our national road system. Three kinds of power lines exist between power plants, homes and businesses:

- EHV lines are like interstate highways.
- High-voltage local transmission lines are like four-lane roads.
- Distribution lines are like two-lane roads that eventually connect to a driveway.

RIGHT-OF-WAY ACTIVITIES

We have two key philosophies regarding power line rights-of-way:

1. Routes should minimize disturbance to the community and the environment.
2. Property owners should be fairly compensated for any acquired land rights.

Once we study the land and propose line routes, we reach out to landowners for the following:

To obtain permission to access your property for activities such as:

- Environmental assessments
- Appraisal work
- Land surveying, soil boring and other field activities
- Cultural and historical resource reviews

To secure rights-of-way and communicate:

- Easement compensation
- Easement terms and conditions
- Right-of-way width

To outline our construction process with a specific focus on:

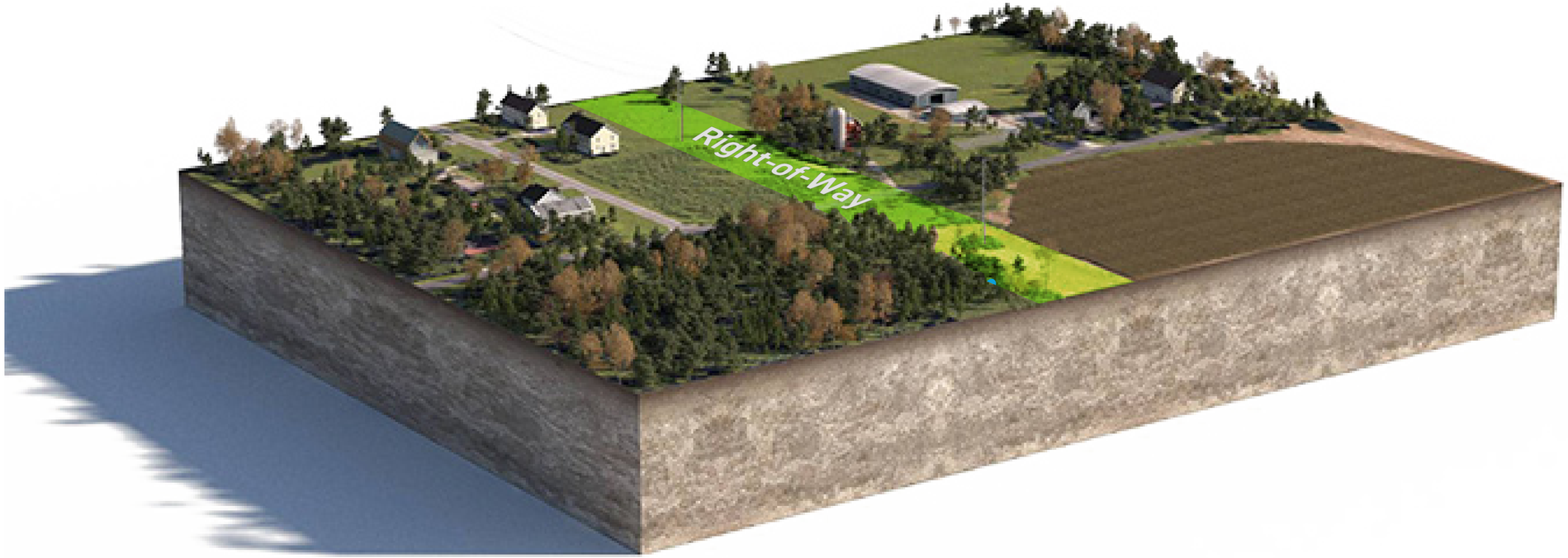
- Property access and special conditions
- Property restoration
- Damage mitigation as appropriate

RIGHT-OF-WAY ACTIVITIES

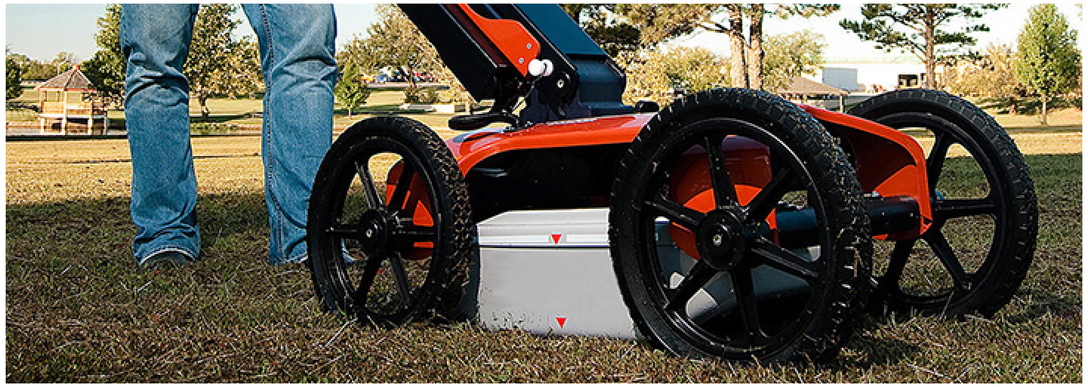
AEP TEXAS
An AEP Company

We have two key philosophies regarding power line rights-of-way:

1. Routes should minimize disturbance to the community and environment.
2. Property owners should be fairly compensated for acquired land rights.



FIELD ACTIVITIES

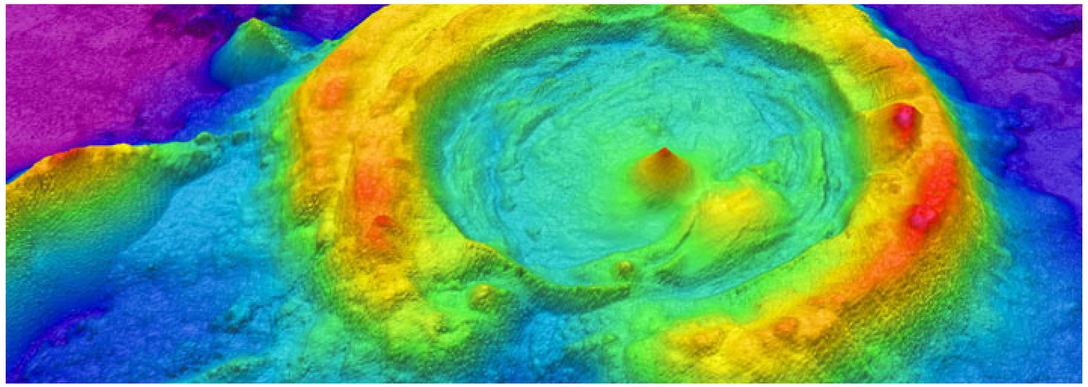


Ground Penetrating Radar: Ground Penetrating Radar (GPR) helps identify the location of underground utilities. A device that looks similar to a lawnmower, and is nondestructive to the soil, uses radio frequencies to detect objects below the ground's surface. Maps and images are created from the data.

Helicopter: Challenging terrain or other restrictions/obstructions can make accessing certain parts of a project area difficult. In these locations, crews use helicopters to install structures, string conductors, perform line work and maintain electric facilities. Company representatives work with local media outlets to communicate these activities to the public.

FIELD ACTIVITIES

Hydro Excavation: Crews use hydro excavation (hydrovac) in areas where many underground utilities are located near each other. This process involves using pressurized water to break down soil to expose underground utilities. Afterward, crews backfill the area. The process helps prevent damage to underground infrastructure while gathering important information.



LiDAR: LiDAR (Light Detection and Ranging) uses laser pulses to measure the distance of an object to the source. The data points result in digital 3D maps for accurate design and engineering. LiDAR surveying crews use mobile (car or aerial vehicle) or static (tripod) equipment.

FIELD ACTIVITIES

Soil Borings: Field crews use a drill to bring up soil samples and then backfill the holes. Testing the core samples helps determine soil conditions in the area. Soil conditions and types can affect structure location and foundation design.

Cultural Resource Study: Field crews walk the area and conduct multiple excavation tests to identify historical and archaeological artifacts. Landowners also provide information about their property to survey crews.

FIELD ACTIVITIES

Environmental Survey: Surveyors collect information about the habitats and physical attributes of the project area. They also look for ecological concerns like wetlands, flood plains and forests. This process can help protect endangered species, such as the Indiana Bat and American Burying Beetle.

Unmanned aerial vehicles: Unmanned aerial vehicles (UAVs), or drones, perform aerial inspections and safely gather data and detailed images of electric facilities. Company employees and vendors comply with all commercial Federal Aviation Administration (FAA) guidelines. Company representatives work with local media outlets to communicate these activities to the public.

FIELD ACTIVITIES

Staking:

- Field crews use staking to mark the project area, identify utility equipment and pinpoint future structure locations. This process essentially transfers engineering and construction plans to the field.
- Right-of-way crews use staking to identify parcel boundaries, easement boundaries and other utility locations within the company's rights-of-way.
- Environmental crews use staking to identify wetlands or other environmentally sensitive areas.

Field Survey:

- Field survey crews help determine an appropriate route for a new transmission line by identifying constraints within the project area.
- Engineers conduct extensive studies of the terrain and soil to determine what types of structures and foundations are most suitable. They also gather information to create digital 3D maps of the project area to help engineer and design the project.

VEGETATION MANAGEMENT

What is vegetation management? AEP's vegetation management approach involves controlling the growth of trees and other vegetation in transmission rights-of-way, the sections of land where transmission power lines are located.

AEP Transmission's vegetation management program helps balance the need for reliable service with respect for the natural environment. The company uses contract forestry crews to complete vegetation management work.

Why is it done? To reduce power outages caused by trees and other plants contacting power lines.

Our vegetation management program aims to:

Work safely and efficiently

Protect the electric grid and reduce power outages

Foster positive relationships with customers and communities

Comply with federal, state and local regulations

Minimize negative impacts to the environment

The North American Electric Reliability Corporation (NERC) sets standards that require utilities to establish minimum clearance distances between transmission lines and the nearest vegetation. Non-compliance can lead to significant community-wide power outages.

- Crews may clear identified danger trees outside the right-of-way as allowed per easement language.
- When possible and practical, crews use selective clearing practices to retain low-growth shrubs and bushes.

*Landowners should speak with a company representative to identify plants that are safe to place in the right-of-way.

WHAT TO EXPECT DURING CONSTRUCTION

Construction Corridor Development

Crews prepare for construction by:

- Building access roads.
- Marking utilities and pole locations along the power line route using stakes and flags.
- Removing obstructions from the right-of-way easement area.
- Installing safety and environmental controls such as fencing.

As part of this process, crews clear the right-of-way:

- Forestry crews prepare for transmission line construction by clearing trees and woody-stemmed vegetation from the right-of-way.
- Crews may clear identified danger trees outside the right-of-way as allowed per the easement language.

WHAT TO EXPECT DURING CONSTRUCTION

Pole Installation

At most pole locations, crews:

- Assemble the pole and place it near the installation area.
- Install and stabilize the base of the new pole.
- Install and secure the new pole.

WHAT TO EXPECT DURING CONSTRUCTION

Wire Installation

Crews install new wires on the new poles along the power line route.

WHAT TO EXPECT DURING CONSTRUCTION

Facilities Placed In Service

Crews energize the equipment after finishing pole and wire installations.

Post-Construction & Site Restoration

We restore properties to as close to their pre-construction condition as possible. Our teams work with individual landowners to address any property damage.

AGENCIES CONTACTED

AEP TEXAS
An AEP Company

FEDERAL

- Department of Defense Military Aviation and Installation Assurance Siting Clearinghouse
- U.S. Environmental Protection Agency
- Federal Aviation Administration
- Federal Emergency Management Agency
- International Boundary and Water Commission
- National Parks Service (NPS)
- National Resource Conservation Service
- U.S. Customs and Border Protection
- U.S. Army Corps of Engineers
- U.S. Customs and Border Protection
- U.S. Fish and Wildlife Services

LOCAL

- Webb County Officials
- City of Laredo Officials
- United Independent School District
- South Texas Development Council

STATE

- Railroad Commission of Texas
- UT Austin Texas Archeological Research Laboratory
- Texas Commission on Environmental Quality
- Texas Department of Transportation
  - Aviation Division
  - Environmental Affairs Division
  - Laredo District Engineer
- Texas General Land Office
- Texas Historical Commission
- Texas Parks and Wildlife Department
- Texas State Soil and Water Conservation Board
- Texas Water Development Board

ENVIRONMENTAL AND LAND USE CRITERIA
FOR TRANSMISSION LINE EVALUATION

AEP TEXAS
An AEP Company

LAND USE

Length of:
- ROW parallel to existing transmission line ROW
- ROW parallel to other existing compatible ROW (roads, highways, railways, etc. – excluding oil and gas pipelines)
- Alternative route
- Parallel to apparent property lines (or other natural or cultural features, etc.)[3]

Length of ROW across:
- Parks/recreational areas[4]
- Cropland
- Pastureland/rangeland
- Cropland or pastureland with mobile irrigation systems

Length of ROW parallel to existing pipeline[5] ROW <500 feet from route centerline

Length utilizing existing transmission line ROW

Sum of length of ROW parallel to existing transmission line ROW, ROW parallel to other existing compatible ROW, length of ROW parallel to apparent property lines

Percent of length of ROW parallel to existing transmission line ROW, ROW parallel to other exiting compatible ROW, length of ROW parallel to apparent property line

Number of:
- Parks/recreational areas[4] within 1,000 feet of route centerline
- Habitable structures[1] within 300 feet of ROW centerline
- Pipeline crossings[5]
- Transmission line crossings
- U.S. and State highway crossings
- Farm-to-Market (FM)/Ranch-to-Market (RM) road crossings
- Federal Aviation Administration (FAA)-registered airports[6] within 20,000 feet of row centerline (with runway >3,200 feet)
- FAA-registered airports[6] within 10,000 feet of ROW centerline (with runway >3,200 feet)
- Private airstrips within 10,000 feet of ROW centerline
- Heliports within 5,000 feet of ROW centerline
- Commercial AM radio transmitters within 10,000 feet of ROW centerline
- FM radio transmitters, microwave towers, and other electronic installations within 2,000 feet of ROW centerline
- Recorded water wells within 200 feet of ROW centerline
- Recorded oil and gas wells within 250 feet of ROW centerline

ENVIRONMENTAL AND LAND USE CRITERIA
FOR TRANSMISSION LINE EVALUATION

AEP TEXAS
An AEP Company

AESTHETICS

- Estimated length of ROW within foreground visual zone[7] of U.S. and State highways
- Estimated length of ROW within foreground visual zone[7] of FM/RM roads
- Estimated length of row within foreground visual zone[7,8] of parks/recreational areas[4]

ECOLOGY

Length of ROW across:
- Upland woodlands/brushlands
- Bottomland/riparian woodland/brushland
- Potential wetlands[9]
- Known occupied habitat of federally endangered or threatened species
- Open water (ponds, lakes, etc.)
- 100-year floodplains

Length of ROW parallel (within 100 feet) to streams
- Number of stream crossings

CULTURAL RESOURCES

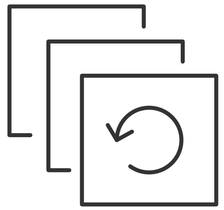
Number of:
- Recorded cultural resource sites within 1,000 feet of ROW centerline
- Cemeteries within 1,000 feet of ROW centerline
- NRHP-listed or determined-eligible sites within 1,000 feet of ROW centerline

Length of ROW crossing areas of high archeological/historical site potential

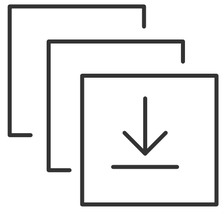
[1]Single-family and multifamily dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis.
[2]Due to the potential inaccuracies of the aerial photography and data utilized, all habitable structures within 320 feet have been identified.
[3]Property lines created by existing road, highway, or railroad ROW are not double counted in the "Length of ROW parallel to property lines" criterion.
[4]Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.
[5]Pipelines 8 inches diameter or greater.
[6]As listed in the Chart Supplement South Central U.S. (formerly known as the Airport/Facility Directory South Central U.S.).
[7]One-half mile, unobstructed. Lengths of ROW within the foreground visual zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the foreground visual zone of FM/RM roads criteria.
[8]One-half mile, unobstructed. Lengths of ROW within the foreground visual zone of parks/recreational areas may overlap with the total length of ROW within the foreground visual zone of interstates, US and state highway criteria and/or with the total length of ROW within the foreground visual zone of FM/RM roads criteria.
[9]As mapped by the USFWS NWI.

THANK YOU!

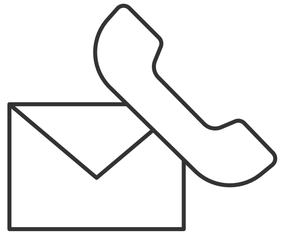
Thank you for visiting the project virtual open house. For more information and project updates please visit the project website, or contact us with any additional questions.



Replay Open House



Download Slide Deck



Contact Us

Visit Project Website