

# BOTTLEBRUSH - SOLSTICE TRANSMISSION PROJECT



**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 the following information:

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

# PROJECT NEED & BENEFITS



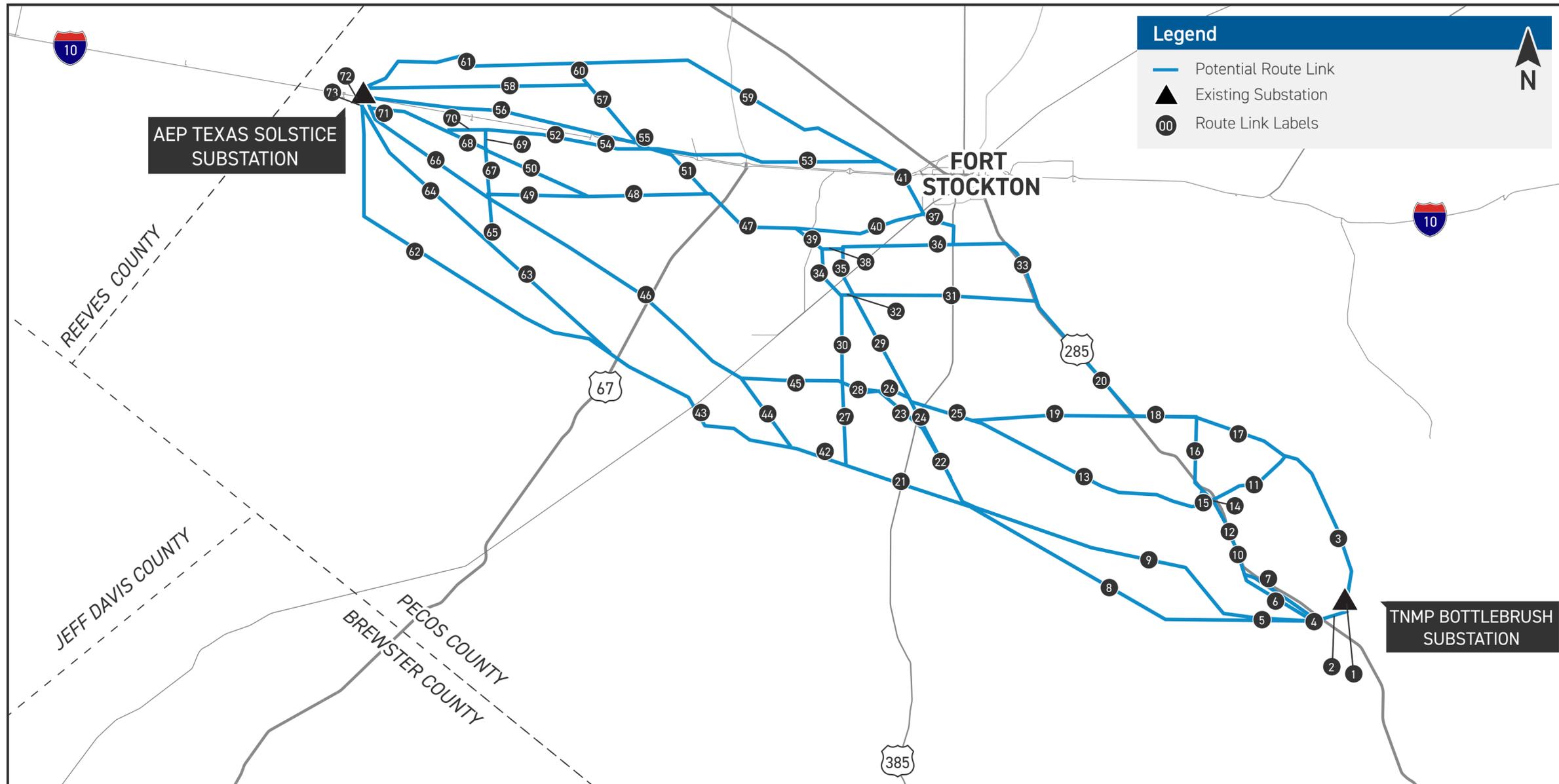
## Why is the project important to our community?

Texas House Bill 5066, passed by the Texas Legislature in 2023 and signed into law by Governor Greg Abbott, required the PUCT to direct the Electric Reliability Council of Texas (ERCOT) to develop an electric reliability plan for the Permian Basin region, which is an important energy location for the state and national economies. The Bottlebrush-Solstice Transmission Line Project is part of that reliability plan.

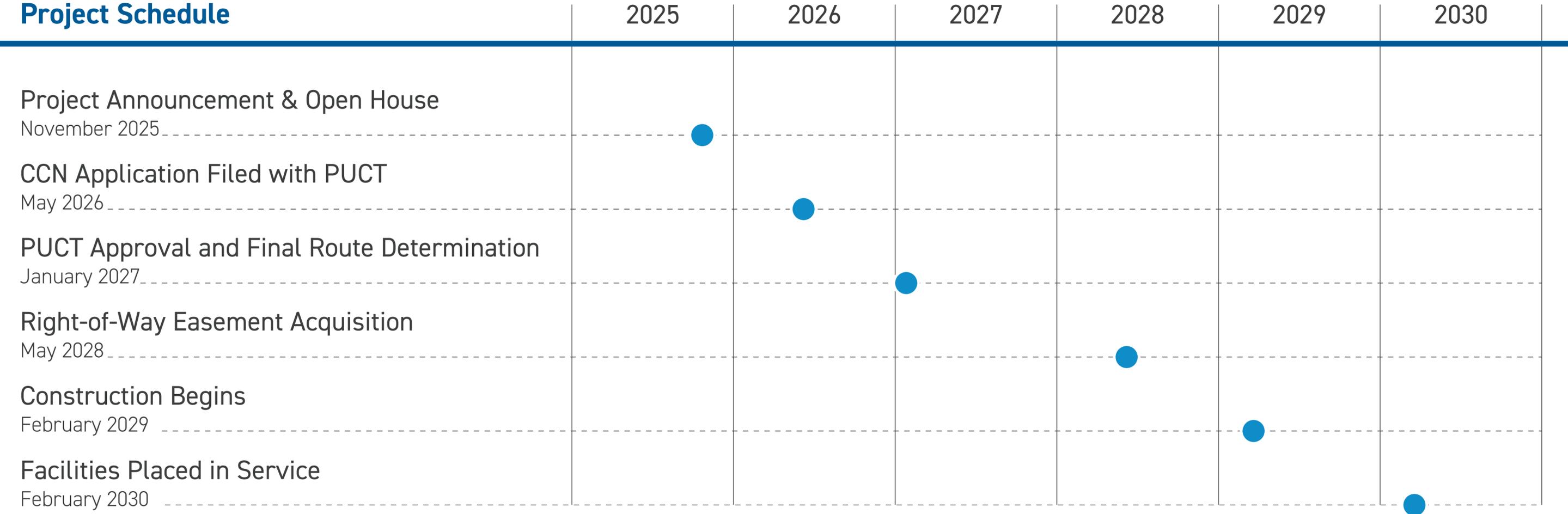
## The Bottlebrush - Solstice Transmission Line Project:

- Reinforces local grid reliability and reduces the risk of outages.
- Facilitates the integration and dispatch of local generation resources by providing robust connections to the broader power grid.
- Alleviates congestion on the existing transmission grid, which may lead to lower congestion costs and potentially lower energy costs for local consumers.

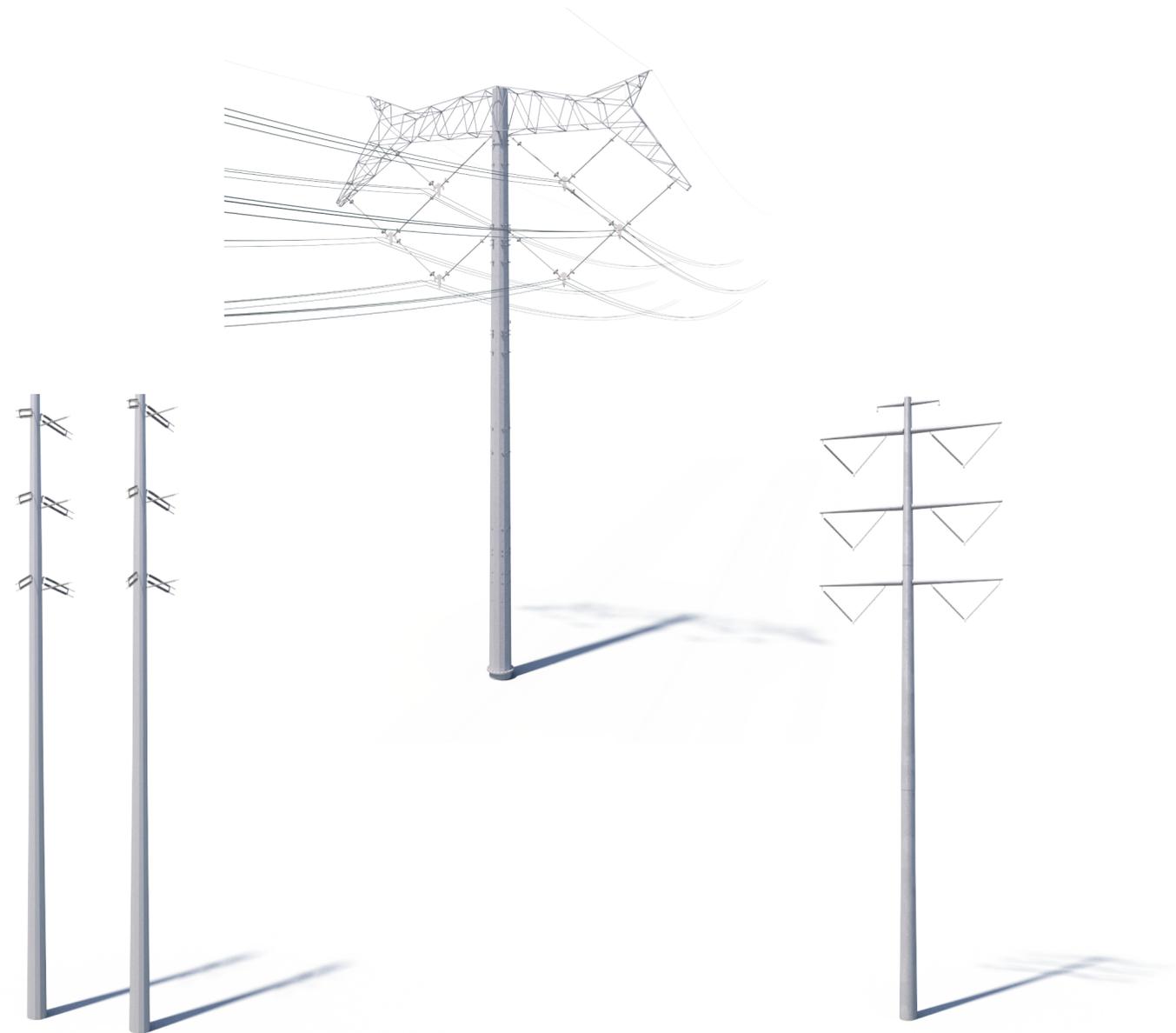
# PROJECT MAP



# PROJECT TIMELINE



# TYPICAL STRUCTURE

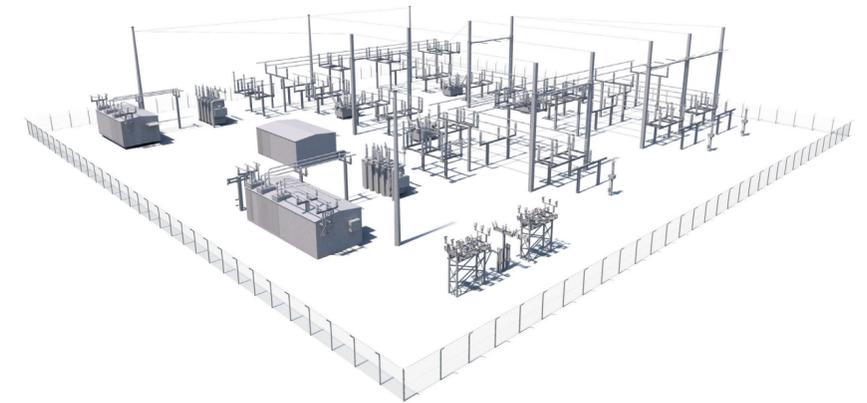
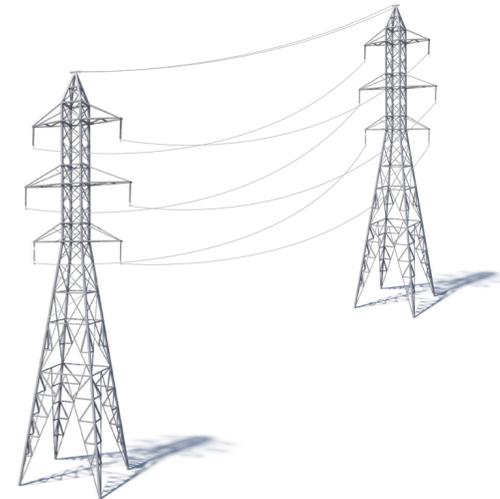
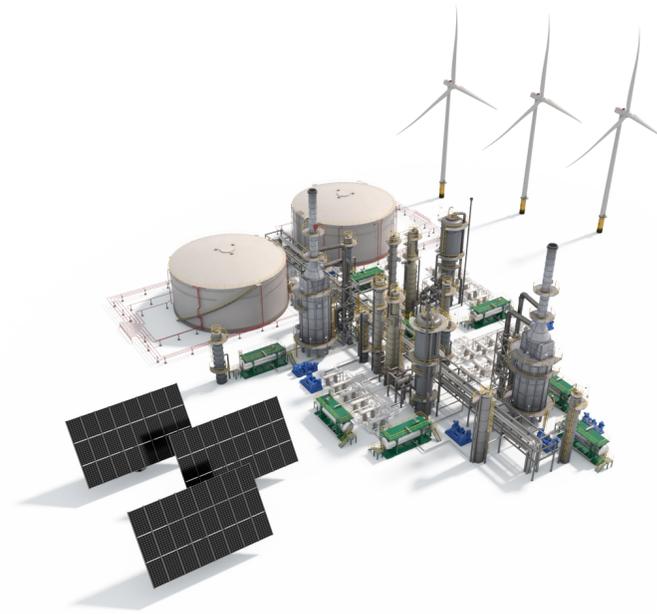


AEP Texas and TNMP representatives plan to install monopole structures. Some new structures will include AEP's Breakthrough in Overhead Line Design (BOLD) technology, which can operate more efficiently than conventional transmission pole designs.

Typical Structure Height: 130 feet  
Typical Distance Between Structures: 1,200 feet  
Typical Right-of-Way Width: 150 feet

\*Representative structures. The exact height and right-of-way requirements may vary based on geography and other factors.

# HOW THE SYSTEM WORKS

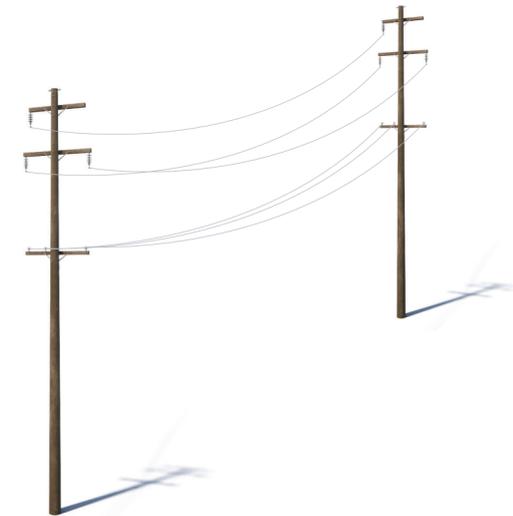
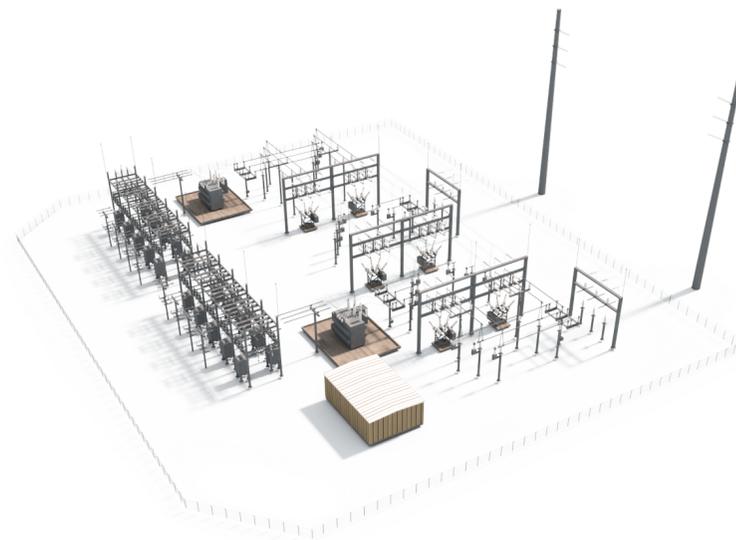
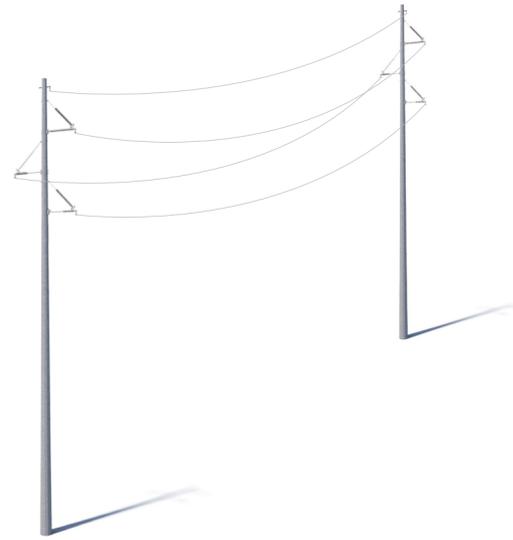


**1. Generation Stations:** →  
A generation station produces power to be transported long distances through transmission lines.

**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.

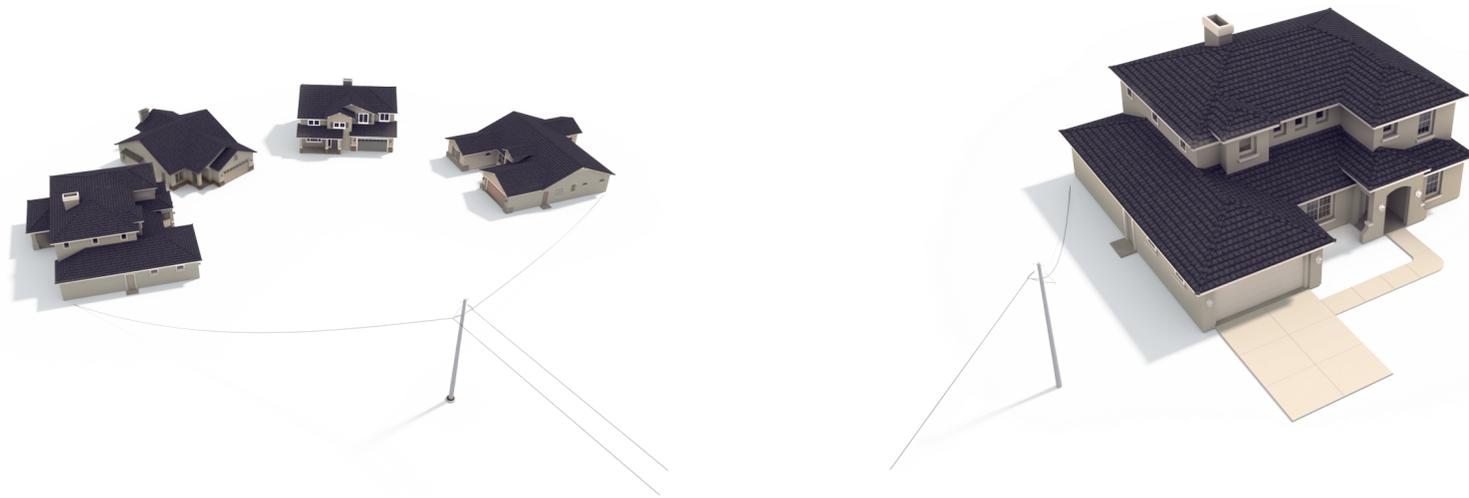
## 5. Distribution Substations:

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.

# TRANSMISSION LINE PROJECT REVIEW PROCESS



## Project Need is Determined

- A transmission addition is determined necessary for service reliability or connection of new load/generation.

## Transmission Routing Process:

### Environmental Assessment and Routing Study

- Define study area
- Identify routing link constraints

### Establish Preliminary Routing Links

- Invite public involvement
- Finalize links, develop routes

### Select Alternative Routes for Filing

## Public Utility Commission of Texas (PUCT) Approval Process

### AEP Texas and TMNP Utilities File Application at PUCT

- Direct mail notice of application to landowners, local public officials, and electric utilities
- Publication of notice in local newspaper
- 30-day intervention period

### If No Hearing is Requested

- Application for a critical project is processed in 180 days

### If Hearing is Requested

- Application processed within 180 days
- Hearing by administrative law judge (ALJ)
- ALJ makes recommendation to PUCT

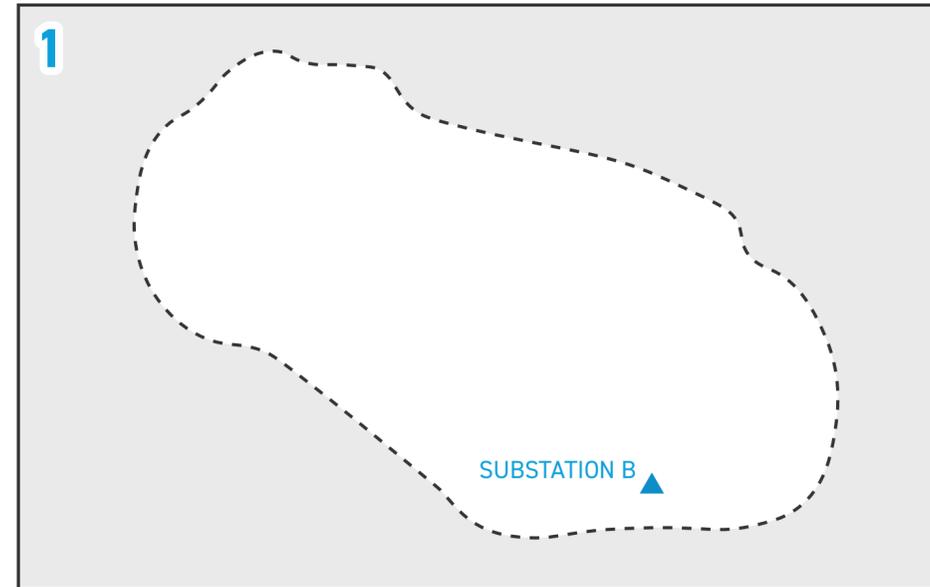
### PUCT Makes the Final Decision

- Approve or deny application
- If approved, decides location of approved route

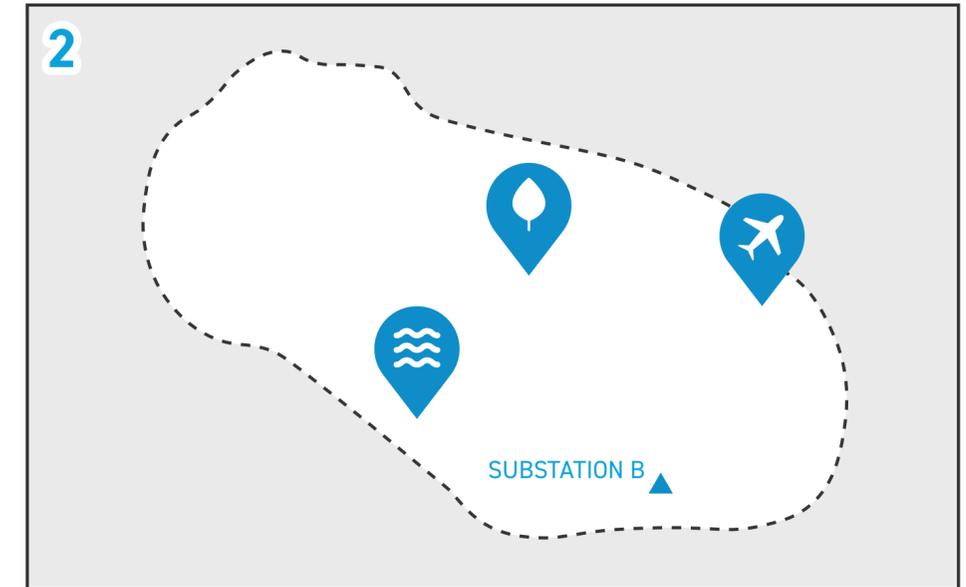
# ROUTING PROCESS



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.



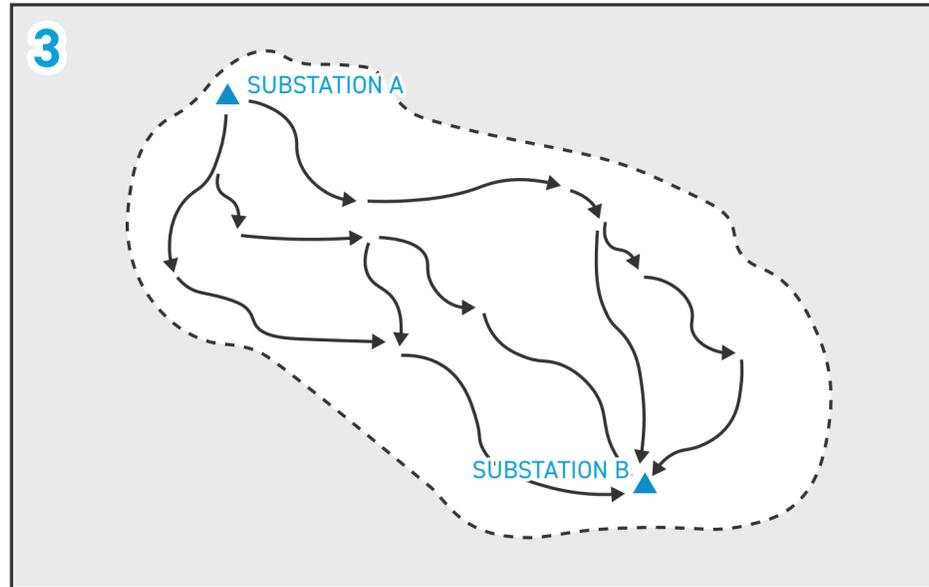
**1. Study Area:** Develop a study area for the project that incorporates both end points of the power line and the area between.



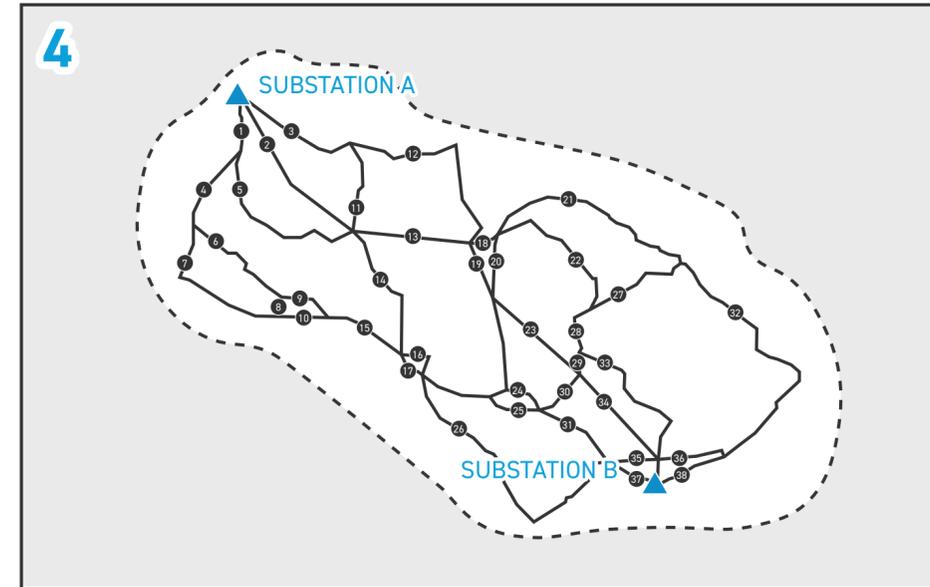
**2. Information Gathering:** Data is gathered for the defined study area including environmental, land use, historic and cultural resources, existing infrastructure and sensitive areas.



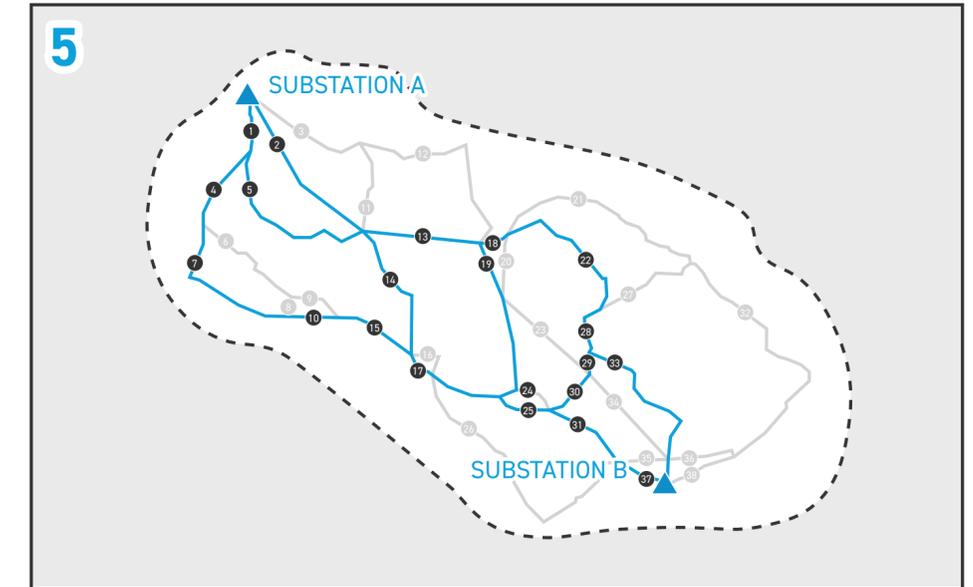
# ROUTING PROCESS



**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 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



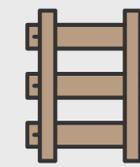
Soils and geology



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.

# ENVIRONMENTAL AND LAND USE CRITERIA FOR TRANSMISSION LINE EVALUATION



## Land Use

1. Length of alternative route
2. Number of habitable structuresa within 500 feetb of the right-of-way (ROW) centerline
3. Length of ROW using existing transmission line ROW
4. Length of ROW parallel to existing transmission line ROW
5. Length of ROW parallel to other existing compatible ROW (roads, highways, railways, etc. – excluding oil and gas pipelines)
6. Length of ROW parallel to apparent property lines (not following existing ROW)c
7. Sum of evaluation criteria 4, 5, and 6
8. Percent of evaluation criteria 4, 5, and 6
9. Length of ROW across parks/recreational areasd
10. Number of additional parks/recreational areasd within 1,000 feet of ROW centerline
11. Length of ROW across cropland
12. Length of ROW across pastureland/rangeland
13. Length of ROW across land irrigated by mobile irrigation systems (rolling or pivot type)
14. Length of ROW across conservation easements and/or mitigation banks (Special Management Areas)
15. Length of ROW across state-owned land
16. Length of ROW across gravel pits, mines, or quarries
17. Length of ROW parallel to existing pipelinee ROW <500 feet from route centerline
18. Number of pipelinee crossings
19. Number of transmission line crossings
20. Number of Interstate, United States, and State highway crossings
21. Number of Farm-to-Market (FM)/Ranch-to-Market (RM) road crossings
22. Number of FAA-registered public/military airfieldsf within 20,000 feet of ROW centerline (with runway >3,200 feet)
23. Number of FAA-registered public/military airfieldsf within 10,000 feet of ROW centerline (with runway <3,200 feet)
24. Number of heliports within 10,000 feet of ROW centerline
25. Number of heliports within 5,000 feet of ROW centerline
26. Number of commercial AM radio transmitters within 10,000 feet of ROW centerline
27. Number of FM radio transmitters, microwave towers, and other electronic installations within 2,000 feet of ROW centerline
28. Number of recorded water wells within 200 feet of ROW centerline
29. Number of recorded oil and gas wells within 400 feet of ROW centerline

# ENVIRONMENTAL AND LAND USE CRITERIA FOR TRANSMISSION LINE EVALUATION



## Aesthetics

- 30. Estimated length of ROW within foreground visual zone of Interstate, United States, and State highways
- 31. Estimated length of ROW within foreground visual zone of FM/RM roads
- 32. Estimated length of ROW within foreground visual zone of parks/recreational areas

## Ecology

- 33. Length of ROW through upland woodlands/brushlands
- 34. Length of ROW through bottomland/riparian woodland/brushland
- 35. Length of ROW across National Wetland Inventory-mapped wetlands
- 36. Length of ROW across designated critical habitat for federally endangered or threatened species
- 37. Number of stream crossings
- 38. Length of ROW parallel (within 100 feet) to streams
- 39. Length of ROW across open water (ponds, lakes, etc.)
- 40. Length of ROW across 100-year floodplains

## Cultural Resources

- 41. Number of recorded cultural sites crossed by ROW
- 42. Number of additional recorded cultural sites within 1,000 feet of ROW centerline
- 43. Number of cemeteries within 1,000 feet of ROW centerline
- 44. Number of NRHP-listed or determined-eligible sites crossed by ROW
- 45. Number of NRHP-listed or determined-eligible sites within 1,000 feet of ROW centerline
- 46. Length of ROW crossing areas of high archeological/historical site potential

- (a) Single-family and multifamily dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, places of worship, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis.
- (b) Due to the potential inaccuracies of the aerial photography and data utilized, all habitable structures within 520 feet have been identified.
- (c) Property lines created by existing road, highway, or railroad ROW are not double counted in the "Length of ROW parallel to property lines" criterion.
- (d) Defined as parks and recreational areas owned by a governmental body or an organized group, club, or place of worship.
- (e) Pipelines 8.0 inches diameter or greater.
- (f) As listed in the Chart Supplement South Central U.S. (formerly known as the Airport/Facility Directory South Central U.S.).
- (g) 0.5 mile, unobstructed.

# AGENCIES AND OFFICIALS



## FEDERAL

- Federal Aviation Administration
- Federal Emergency Management Agency
- Military Aviation and Installation Assurance Siting Clearinghouse
- National Park Service
- Natural Resources Conservation Service
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency

## STATE

- Railroad Commission of Texas
- Texas Commission on Environmental Quality
- Texas Department of Transportation
- Texas General Land Office
- Texas Historical Commission
- Texas Office of Public Utility Counsel
- Texas Parks and Wildlife Department
- Texas Water Development Board

## LOCAL

- Upper Pecos Soil and Water Conservation District
- Trans Pecos Soil and Water Conservation District
- Pecos County Water Control Improvement District
- Middle Pecos Groundwater Conservation District

## PECOS COUNTY

- Pecos County Judge
- Pecos County Commissioners
- Buena Vista Independent School District
- Fort Stockton Independent School District
- Fort Stockton Economic Development
- Iraan-Sheffield Collegiate Independent School District
- Pecos County Historical Commission

## NON-GOVERNMENTAL ORGANIZATIONS

- Texas Agricultural Land Trust
- Texas Cave Management Association
- Texas Land Conservancy
- Texas Land Trust Council
- Texas Water Trade
- The Nature Conservancy
- Watershed Association

# 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

# 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.

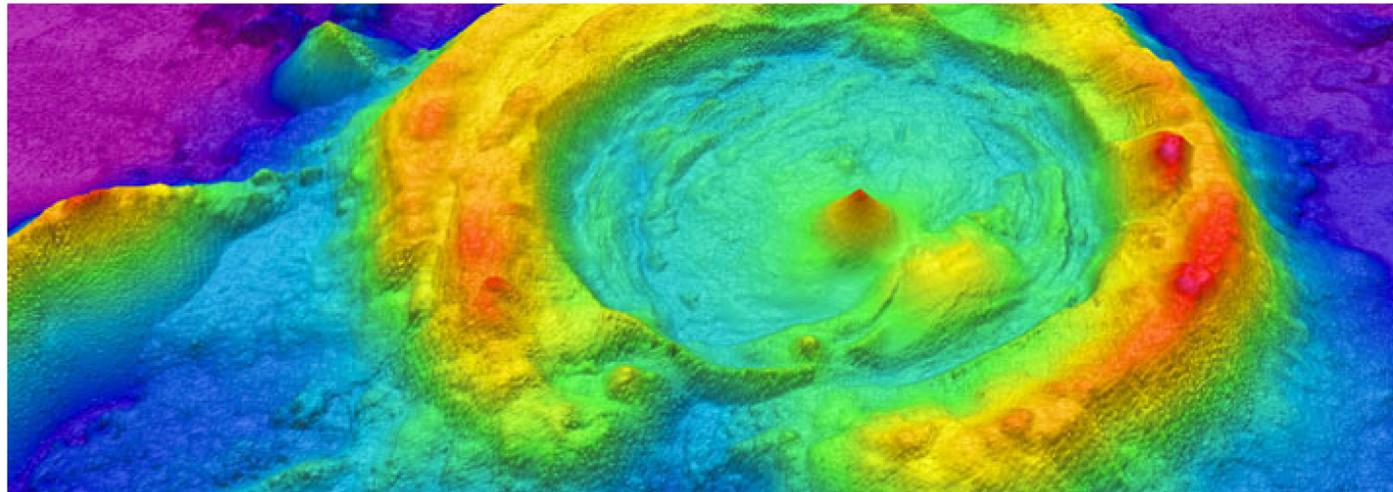


**Helicopter:** Challenging terrain or other restrictions/obstructions can make accessing certain parts of a project area difficult. In these locations, crews use helicopters to install structures, string conductors, perform line work and maintain electric facilities. Company representatives work with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

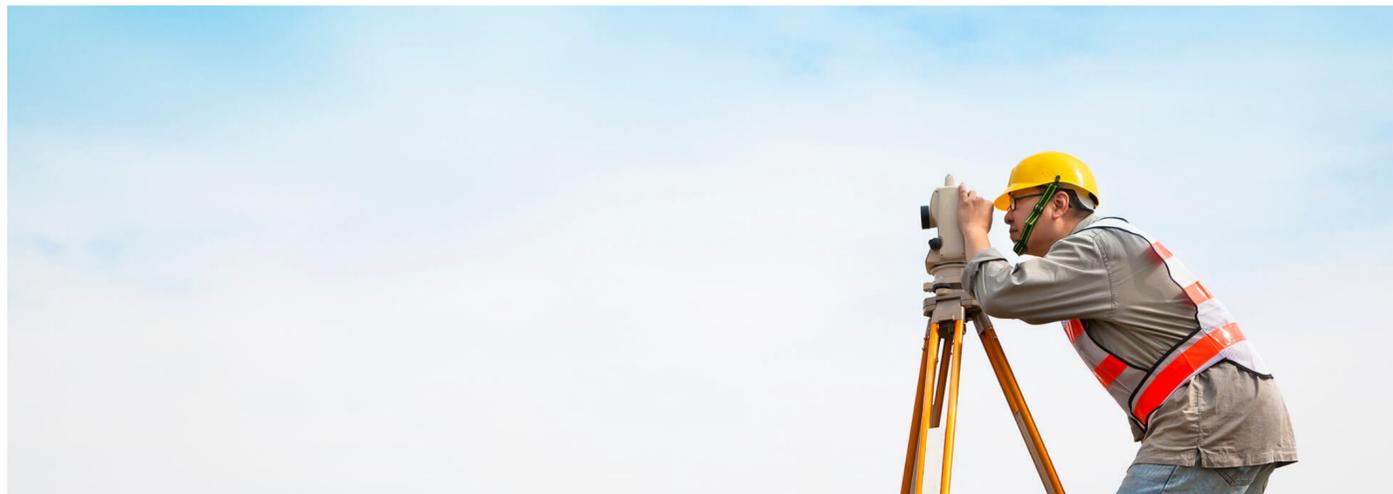


## Staking:

- 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.



# 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.

# 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.

