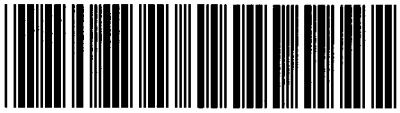

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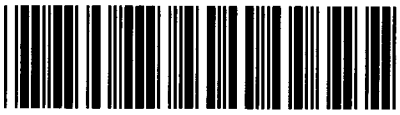

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SOAH DOCKET NO. 473-15-3595
PUC DOCKET NO. 44547

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APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE PROPOSED ZENITH TO GIBBONS CREEK 345-KV TRANSMISSION LINE PROJECT IN HARRIS, GRIMES, AND WALLER COUNTIES	§	**BEFORE THE STATE OFFICE**
	§	**OF**
	§	**ADMINISTRATIVE HEARINGS**

DIRECT TESTIMONY

OF

KAREN HARDIN

ON BEHALF OF

INTERVENOR
TEXAS PARKS AND WILDLIFE DEPARTMENT

State of Texas §
§
County of Leon §

Before me, the undersigned, on this, the 11th day of July 2015, appeared Karen Hardin, who after being duly sworn stated that the testimony contained herein is a true and accurate representation of what the testimony would be if this testimony were to be given orally.

VICKI J STROUD
My Commission Expires
May 10, 2019

Vicki J. Stroud
Notary Public for the State of Texas

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Karen B. Hardin. My business address is Texas Parks and Wildlife Department, 2706 West Commerce Street, Buffalo, Texas 75831, with a project review request business mailing address of 4200 Smith School Road, Austin, Texas 78744.

Q. WHAT IS YOUR OCCUPATION?

A. I am a Program Specialist IV in the Wildlife Habitat Assessment Program focusing on wildlife habitat conservation with respect to development projects. My work includes assessing potential impacts to the wildlife resources of Texas as well as reviewing the project for potential impact to Texas Parks and Wildlife Department (TPWD) properties. I review infrastructure development proposals from a wide array of land development industries, including transportation, housing, water and wastewater, electric generation and transmission, oil and gas, lignite mining and reclamation, recreational parks, communications, and military. I evaluate the potential impacts of these projects on wildlife habitat, endangered species, native plant communities and terrestrial and aquatic wildlife.

Q. PLEASE DESCRIBE YOUR ACADEMIC QUALIFICATIONS AS THEY RELATE TO YOUR TESTIMONY.

A. I hold a Master of Science degree in Range and Wildlife Management from Texas A&M University – Kingsville. My graduate coursework included topics in wildlife management techniques, wildlife nutrition, avian community ecology,

wildlife habitat management, grazing management, analysis of research data, wildlife research methods, statistical computing, and wildlife diseases. I hold a Bachelor of Science degree in Civil Engineering from Texas A&M University. My undergraduate coursework included topics in chemistry, organic and biological chemistry, problem solving, computing, resources and the environment, soils and geology, fluid dynamics, environmental engineering, water resources engineering, water and wastewater treatment, and waste management. I have also attended various training courses through my current employer and previous employers covering subjects such as Wetland Delineation Training, Wetland Plant Identification Training, Avian Interactions with Power Lines Workshop, Texas Conservation Banking Course, and Reviewing National Environmental Policy Act Documents Course.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE AS IT RELATES TO YOUR TESTIMONY.

A. My work in the field of natural resources management initiated in May of 1997, after graduating in May of 1996 with a Bachelor of Science in Civil Engineering with an environmental engineering focus. From May 1997 to August 1998, I worked as an Environmental Consultant performing various field activities and reporting. My primary duties as a consultant were focused on Federal Energy Regulatory Commission and Endangered Species Act compliance for interstate gas transmission pipeline construction, emergency response and clean-up for an oil field spill, and ground water monitoring and reporting associated with

underground petroleum storage tanks. From 1998-2000, I managed compliance and deliverables for the Texas Department of Transportation - Houston District's Municipal Separate Storm Sewer System, National Pollutant Discharge Elimination System permit for protection of water quality. From 2000 – 2002, I worked for the Texas Department of Transportation in roadway design. From 2002-2004, I completed coursework, research and thesis for my Master of Science in Range and Wildlife Management. Since October 2004 I have worked at TPWD in the Habitat Assessment Program as a Program Specialist reviewing proposed development projects. My primary job duty is to review and comment on proposed infrastructure projects (rail, roadways, transmission, military, water development, etc.) for potential impacts to biological resources including rare and protected species.

Q. IN WHAT CAPACITY ARE YOU TESTIFYING?

A. I am testifying as an employee of Texas Parks and Wildlife Department, Wildlife Division, Habitat Assessment Program. I am primarily assigned projects that occur within the Pineywoods, Post Oak Savannah, and Blackland Prairies Ecoregions. I was assigned this project, which occurs within the Pineywoods, Post Oak Savannah, Blackland Prairies, and Western Gulf Coastal Plain Ecoregions, because the scoping request and initial study area extended into my area of responsibility.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I present my assessment of the potential impact of a 345-kilovolt (kV) electrical transmission line on the wildlife resources that would be affected by this project and provide comments and recommendations to protect these resources. My opinions are based on my experience with and understanding of wildlife habitat and natural resources in the project area.

Q. DID YOU REVIEW THE CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC (CENTERPOINT) ENVIRONMENTAL ASSESSMENT (EA), AS IT PERTAINS TO THE IMPACTS TO WILDLIFE RESOURCES IN THE PROJECT AREA?

A. Yes.

Q. WHAT IS THE SOURCE OF THE INFORMATION YOU ARE USING TO EVALUATE THE PROPOSED PROJECT?

A. Publicly available data and the information provided by PUC Docket No. 44547, Interchange Item 5, CCN Application, Attachment 1, Environmental Assessment and Alternative Route Analysis for the Brazos Valley Connection in Grimes, Harris, and Waller Counties, Texas. The EA was prepared by POWER Engineers, Inc. (POWER). CENTERPOINT provided a copy of the CCN application and EA to TPWD on April 24, 2015.

Q. CAN YOU SUMMARIZE YOUR UNDERSTANDING OF THE PROPOSED PROJECT DESCRIPTION?

A. In summary, CENTERPOINT proposes to design and construct a 59.5- to 77.7-mile (mi), depending on the route selected, new double-circuit 345-kV transmission line to connect the existing CENTERPOINT Zenith Substation in northwest Harris County to the existing Texas Municipal Power Agency Gibbons Creek Substation in northwest Grimes County. The line would be constructed within a typical 100-foot (ft) wide right-of-way (ROW) on double-circuit steel lattice towers with a vertical phase configuration, except for route segment N3 for which the line would be constructed within a typical 90-ft wide ROW on double-circuit steel poles with a vertical phase configuration. Typical structures would range from 149 to 151 ft tall.

Q. WHAT IS TPWD'S GREATEST CONCERN ABOUT THIS PROJECT?

A. TPWD's greatest concerns are potential impacts to coastal prairie habitat known as the Katy Prairie located within the study area generally south of U.S. Highway (US) 290 and existing conservation easements.

Conservation Easements: The EA Figure 5-1 mapped conservation easements as environmental land use constraints. A number of conservation easements form a patchwork across the southern portion of the study area near the Zenith Substation aimed at conservation of coastal prairie habitat of the Katy Prairie. Route segments that run alongside, cross, or are in close proximity to easements protecting the Katy Prairie habitat include Segments A, C, D, E, and H. The route CENTERPOINT identifies as best addressing the requirements of the Public

Utility Regulatory Act (PURA) and the Public Utility Commission (PUC) Substantive Rules (1A), TPWD's preferred route (10), and TPWD's remaining top five preferred routes, in no particular order (1A, 2, 6, and 11) all avoid using Segments A, C, D, E, and H, thus avoiding impacts to existing conservation easements. With conservation easements, a conservation organization or government agency holds an easement that restricts certain uses and development of the property. Conservation easements allow for conservation of private lands, enabling landowners to conserve special features such as wetlands, fertile soils, mature trees, and wildlife habitat while also protecting their property from future development. If property within the project area is currently being used to protect and conserve the state's natural resources, then TPWD would prefer that these properties do not become fragmented by the proposed transmission line. TPWD recommends the PUC consider conservation easements as environmental criteria when selecting a route and avoiding conservation easements when possible.

Katy Prairie Habitat: TPWD is concerned with the project's potential to fragment the Katy Prairie, which is an environmentally sensitive coastal prairie ecosystem of the Western Gulf Coastal Plain with generally undeveloped portions located within the study area near US 290 and extending to the south. The remaining Katy Prairie habitats are threatened by the westward progression of development in the Houston area. The Katy Prairie and its associated freshwater wetlands are characterized by complex micro-topography and patterns of inundation that provide diverse plant communities and offer habitat for native pollinators, high

priority species of grassland birds including the Sprague's pipit (*Anthus spragueii*) and LeConte's (*Ammodramus leconteii*) sparrow, migrant songbirds, wintering raptors, and a number of migrating and wintering waterfowl and shorebirds. TPWD prefers avoiding or minimizing fragmentation and loss of habitats in the Katy Prairie. Several route segments cross the Katy Prairie south of US 290 including Segments A, B, C, D, E, F, G, H, I, J, K, M, NA, NB, O, P, Q, R, S, T, U, V, W, and X.

Within the study area south of US 290, the route segments that entirely follow existing transmission lines include Segments B, F, O, and T, and route segments that follow an existing transmission line for a portion of the segment include Segments K, Q and W. The remaining route segments south of US 290 may follow existing small distribution lines, small roads or property boundaries. The existing small distribution lines were identified as compatible ROW in EA Section 4.1.3, indicating that the proposed line would be built entirely or partially within exiting CENTERPOINT ROW. However, despite the fact that the proposed line may utilize or follow existing ROW containing smaller structures, incorporating a 345-kV line along the remaining route segments south of US 290 would increase fragmentation of the Katy Prairie within and near conservation easements. Constructing a 345-kV line along these routes would also create tall aerial obstructions to avian species that may utilize the prairies, such as the Mountain Plover (*Charadrius montanus*), a Species of Greatest Conservation Need (SGCN) for which a wintering population has been recorded in the TXNDD

along Segment D. If the Katy Prairie cannot be avoided entirely, TPWD prefers CENTERPOINT avoid placing multiple rights of way containing tall structures in the prairie by placing the proposed 345-kV line along existing transmission structures, thus minimizing fragmentation of the Katy Prairie.

The Zenith Substation is located within the Katy Prairie, thus all routes filed with the CCN application must cross the Katy Prairie to establish a connection to the Zenith Substation. Two route options initiate from the Zenith Substation using either Segment A or B. Of the routes identified in the EA, TPWD prefers a route that utilizes Segment B to exit the Zenith Substation and Segment F to avoid crossing conservation easements found along Segment E. The route CENTERPOINT identifies as best addressing the requirements of PURA and PUC Substantive Rules (1A), TPWD's preferred route (10), and TPWD's remaining top five preferred routes, in no particular order (1A, 2, 6, and 11) all utilize Segments B and F which exit the Zenith Substation and proceed northward parallel to an existing 345-kV transmission line. Routes following Segments B and F along an existing 345-kV transmission line appear to create the least amount of aerial obstruction and habitat fragmentation in Katy Prairie habitat. TPWD recommends a route that minimizes fragmentation of the Katy Prairie, avoids crossing conservation easements, and minimizes placement of new tall structures in areas of the Katy Prairie that presently contain relatively short structures.

Q. CAN YOU SUMMARIZE PREVIOUS COORDINATION BETWEEN TPWD AND POWER ON THIS PROJECT?

A. On June 13, 2014, POWER provided TPWD with a project scoping review request and map of the preliminary study area. TPWD requested GIS shapefiles from POWER for the study area boundary on July 7, 2014. TPWD received the requested GIS shapefiles from POWER on July 8, 2014.

As a result of a telephone conversation with POWER, on July 22, 2014 TPWD provided POWER with a website link to the downloadable TPWD Land and Water Resources Conservation and Recreation Plan inventory of conservation and recreation properties.

On July 25, 2014, TPWD provided preliminary information and recommendations to POWER in response to the scoping review request and preliminary study area of this project. This response was included in Appendix A of the EA and is attached to my testimony. In that letter, TPWD recommended CENTERPOINT

- use existing facilities where possible,
- route the proposed transmission line along existing roads, pipelines, transmission lines, or other utility ROW to reduce habitat fragmentation,
- avoid riparian areas, wetlands, and open water to the extent feasible,
- mark lines near waterways to reduce bird collisions,
- design lines to prevent electrocution to birds,

- obtain digital data from the Texas Natural Diversity Database (TXNDD) because the study area is large,
- assess the route alternatives for nesting, foraging or roosting habitat for the Bald Eagle (*Haliaeetus leucocephalus*),
- identify areas of suitable habitat along the route alternatives for federally- and state-listed species with potential to occur within the study area,
- avoid habitat for federal- and state-listed species,
- avoid harm to state-listed threatened Timber rattlesnake (*Crotalus horridus*) if encountered,
- identify in the EA the impact avoidance and minimization measures that would be employed to protect state-listed species,
- avoid crossing TPWD properties or lands owned or managed for conservation or recreation by county, city, state and/or federal entities as well as mitigation banks and properties protected through conservation easements with governmental and non-governmental conservation organizations,
- avoid impacts to species of greatest conservation need, special features and natural communities tracked by TPWD,
- protect areas of native vegetation from disturbance and introduction of non-native vegetation,
- mark areas exhibiting rare plants in the construction ROW to avoid impacts,
- provide buffers around colonial waterbird rookeries or heronries,

- incorporate the Ecological Mapping Systems of Texas land classification information into the EA, and
- minimize impacts to native vegetation to the extent feasible including bottomland hardwood forests, sensitive ecological areas, woodlands, and major stream corridors.

On April 29, 2015, TPWD requested GIS shapefiles from POWER/CENTERPOINT for the route alternatives and endpoint substation locations, and the Excel file for Tables 4-1 and 4-2 in the EA (Environmental and Land Use Data for the Primary Transmission Line Route Segments and Routes, respectively). TPWD received the requested GIS shapefile and Excel file from CENTERPOINT on April 30, 2014 and May 27, 2015, respectively.

Q. CAN YOU DESCRIBE THE ROUTE CENTERPOINT IDENTIFIES AS BEST ADDRESSING THE REQUIREMENTS OF PURA AND PUC SUBSTANTIVE RULES AS YOU UNDERSTAND IT?

A. The EA evaluated 32 alternative routes using 100 primary transmission line segments which were identified following a preliminary alternative route analysis and public involvement program. The EA Table 4-2 provides data for 54 environmental and land use criteria that were collected for each alternative route. The EA divided the 32 primary alternative routes into three geographically diverse routes families: Eastern, Central and Western. After identifying criteria from Table 4-2 that did not contribute to qualitative or quantitative comparisons

between the routes, POWER used 30 key environmental and land use criteria (Table 5-1) for a ranking and consensus process for selecting a route that best addresses the requirements of PURA and PUC Substantive Rules. CENTERPOINT reviewed POWER's recommendation and concurred that each of the 32 alternative routes was feasible from an engineering, constructability, and cost perspective. CENTERPOINT reviewed POWER's recommendation and concurred that Route 1A (B-F-LA-LB-LC-LD-N1A-N1B-N1C-H2-V2A-L3-A3-C3-D3A-M3-O3-P3-Q3-R3) was the route that best addresses the requirements of PURA and the PUC's Substantive Rules. Thirty-two alternative routes were filed with the CCN application. CENTERPOINT and POWER identified Route 1A as the route that best addresses the requirements of the PURA and PUC Substantive Rules for this project based on the following rationale:

- Second shortest of the alternative routes in length (60.5 mi)
- Parallels existing features for a large length of the route (~93%)
- Most of the route parallels an existing transmission line ROW (~ 85%)
- Of 262 habitable structures along the route, 228 habitable structures are already within 500 ft of an existing transmission line
- Has an equivalent distance (0.13 mi) with other alternative routes across park and recreational areas with all routes ranging from 0 to 0.7 mi
- Has an equivalent distance (4.0 mi) with other alternative routes within the foreground visual zone of parks or recreational areas, with all routes ranging from zero to 5.3 mi
- Crosses 18.6 mi of upland woodlands

- Crosses 4.9 mi of bottomland/riparian woodlands
- Second lowest number of stream crossings (99)
- Moderate length across National Wetland Inventory (NWI) mapped wetlands (4.0 mi)
- No known recorded historical or archeological sites within the ROW
- Least expensive route

According to Table 4-2, CENTERPOINT's preferred route (1A) crosses approximately 0.3 mi of a known TXNDD occurrence of the federal- and state-listed endangered Navasota ladies'-tresses (*Spiranthes parksii*), follows parallel to 3.7 mi of streams within 100 feet of the route centerline, and crosses 6.1 mi of 100-year floodplains. According to TPWD review, CENTERPOINT's preferred route (1A) crosses no known TXNDD occurrences of state rare/unique plant locations within the ROW, minimizes fragmentation of Katy Prairie habitat by using Segments B and F which follow an existing 345-kV transmission line from the Zenith Substation to US 290, and avoids using route segments that occur along or across conservation easements within the Katy Prairie.

Q. DID TPWD PROVIDE COMMENTS AND RECOMMENDATIONS TO THE PUC TO PROTECT THE STATE'S FISH AND WILDLIFE RESOURCES REGARDING THE PROPOSED TRANSMISSION LINE?

A. Yes. By letter dated June 23, 2015, TPWD provided comments and recommendations to the PUC to protect the state's fish and wildlife resources

regarding the proposed transmission line. A copy of this letter is available on the PUC Interchange and is attached to my testimony.

Q. DOES TPWD SUPPORT THE SELECTION OF ROUTE 1A?

A. TPWD determined that Alternative Route 1A was one of the top five best alternative routes to minimize impacts to natural resources.

Q. WHICH ROUTE DOES TPWD RECOMMEND THE PUC SELECT TO BEST AVOID OR MINIMIZE ADVERSE IMPACTS TO WILDLIFE HABITAT?

A. TPWD typically recommends that transmission line routes be located adjacent to previously disturbed areas such as existing utility or transportation ROWs and discourages fragmenting habitat or locating in areas that could directly negatively impact wildlife, including listed species. None of the alternative routes cross TPWD property. After careful evaluation of the 32 routes filed with the CCN, TPWD selected Alternative Route 10 as the route having the least potential to impact fish and wildlife resources, followed by Routes 1A, 2, 6, and 11, in no particular order. The decision to recommend Alternative Route 10 was based primarily on the following factors:

- Third shortest route (60.9 mi) (All routes 59.5 – 77.7 mi)
    - Follows parallel to existing corridors not including apparent property boundaries for 85% of the route length (All routes 96% - 26%)

- Eighth shortest distance across bottomland/riparian woodlands (4.7 mi) (All routes 4.1 – 10.2 mi)
- Eighth shortest distance across NWI mapped wetlands (3.7 mi) (All routes 1.7-5.1 mi)
- Crosses no known occurrences of federal endangered/threatened species of plants or animals as indicated on Table 4-2 (All routes 0 – 0.7 mi).
- Crosses no known occurrences of state rare/unique plant locations within the ROW (All routes 0 to 2 crossings)*
- Crosses the least number of streams (89) (All routes 89-130)
- Follows parallel to the shortest length of streams within 100 feet of the route centerline (2.9 mi) (All routes 2.9 – 6.6 mi)
- Second shortest distance across 100-year floodplains (5.7 mi) (All routes 5.4 – 14.9 mi)
- Minimizes fragmentation of Katy Prairie habitat by using Segments B and F which follow an existing 345-kV transmission line from the Zenith Substation to US 290
- Avoids using route segments that occur along or across conservation easements within the Katy Prairie**

*Please note the EA Table 4-2 indicates none of the routes cross known occurrences of state rare/unique plant locations; however, TPWD review of the project indicates that Segment W crosses a known occurrence of the Shinner's sunflower (*Helianthus occidentalis ssp plantagineus*) and Segment G crosses a

known occurrence of a Houston Coastal Prairie, discussed in TPWD's June 23, 2015 comment letter in *State Fish and Wildlife Resources: Resources of Concern.*

**Although "length of ROW across conservation easements" was not an environmental criteria used by CENTERPOINT, TPWD considers routes that do not impact conservation easements to better minimize impacts to fish and wildlife resources because future habitat fragmentation is restricted on these properties.

Routes 1A, 2, 6, 10 and 11:

- Are within the top eight shortest routes
- Are within the top nine routes that parallel the most existing transmission lines, pipelines, railroads, and roads excluding apparent property lines
- Are within the top ten routes crossing the least amount of bottomland/riparian woodlands
- Are within the top 14 routes crossing the least amount of mapped wetlands
- Are within the top 12 routes crossing the least number of streams
- Are within the top seven routes parallel to the least length of streams within 100 feet of the route centerline
- Are the top five routes crossing the least amount of 100-year floodplains;
- Ranked highest when tallying routes that occur in the top ten of each ecological criteria that TPWD evaluated

- Minimize fragmentation of Katy Prairie habitat by using Segments B and F which follow an existing 345-kV transmission line from the Zenith Substation to US 290
- Avoid using segments that occur along or across conservation easements within the Katy Prairie

Because on-the-ground surveys of the alternative routes were not conducted, conclusions regarding the routes which best minimize impacts to important, rare, and protected species are based on the natural resource information, remote sensing and field reconnaissance surveys presented in the CCN application and EA, as well as publicly available information examined in a GIS.

Of the routes evaluated in the EA, Alternative Route 10 appears to best minimize adverse impacts to natural resources while also maintaining a shorter route length and paralleling existing corridors for approximately 85% of the route length. TPWD recommends the PUC select a route that would minimize adverse impacts to natural resources, such as Alternative Route 10. TPWD recommends that the PUC avoid selecting routes that contain Segments A, C, D, E, and H due to their proposed location alongside, across, or in close proximity to conservation easements. Furthermore, TPWD prefers that the PUC avoid selecting Routes 12, 13, 17, 22, 23, 24, 25, 26, 27, 28, and 29, to minimize aerial obstruction and habitat fragmentation in the previously discussed Katy Prairie habitat.

Q. DO ANY FEDERALLY-LISTED ENDANGERED SPECIES HAVE THE POTENTIAL TO BE IMPACTED BY THE PROJECT?

A. Yes. The federally-listed endangered Navasota ladies'-tresses (*Spiranthes parksii*) and Texas prairie dawn (*Hymenoxys texana*) are known to occur within the study area. The EA acknowledges the known TXNDD occurrences of these species within the study area and indicates that Routes 7, 8, 9, 10, 11, 14, 15 and 18 cross zero miles, Route 13 crosses 0.7 mi, and the remaining routes cross from 0.1 to 0.6 mi of TXNDD occurrences of these plants. The EA indicates that where the routes do cross the known occurrences, routes are typically paralleling existing transmission line, roadway or pipeline ROWs. The EA indicates that CENTERPOINT proposes to span existing threatened and endangered plant species communities where practical and that field surveys for these plants may be performed, if necessary, to identify potential suitable habitat for each listed plant species and to determine the need for any additional species-specific surveys. The EA indicates that CENTERPOINT would develop an avoidance and impact minimization plan so that there are no significant adverse impacts to federally-listed plant species.

The EA Section 2.4.4.4 and Section 4.4.4.4 *Threatened or Endangered Species* indicates that the study area has potential for occurrence of the federal- and state-listed endangered Houston toad (*Anaxyrus houstonensis*) and Red-cockaded Woodpecker (*Picoides borealis*) and that there are no known occurrences of these species along any of the alternative routes. The EA 4 indicates that once a route

is approved, CENTERPOINT will consult with the USFWS, if necessary, to determine the need for any additional field surveys or Section 7 permits.

The EA identifies the following federally-listed birds that may only occur within the study area as non-breeding migrants or post-breeding visitors: federal- and state- endangered Whooping Crane (*Grus americana*) and Interior Least Tern (*Sterna antillarium athalassos),* federal-candidate Sprague's Pipit (*Anthus spragueii*), and federal-delisted Brown Pelican (*Pelecanus occidentalis*). TPWD notes that the federal-threatened Red Knot (*Calidris canutus rufa*) may also occur in the study area during migration. The provisions of the MBTA also apply to these species.

Q. HOW DOES TPWD RECOMMEND MINIMIZING IMPACTS TO FEDERALLY-LISTED ENDANGERED SPECIES?

A. TPWD stresses that the TXNDD data cannot be used to determine absence of a species from an area and that the alternative routes may cross additional unknown occurrences of these species where suitable habitat exists. The presence of known occurrences of Navasota ladies'-tresses and Texas prairie dawn within the study area is an indicator that these species may occur elsewhere in the study area and in some instances, can be used as reference sites when surveying for additional occurrences. TPWD recommends the PUC consider that unknown areas along the alternative route segments may contain the federal- and state-listed endangered Navasota ladies'-tresses and Texas prairie dawn, especially given that known

occurrences are within the study area. TPWD recommends that prior to construction, the selected route be surveyed in areas of suitable habitat during the season of highest detection for the Navasota ladies'-tresses and Texas prairie dawn, such as during the flowering period for each species. Where occurring within the ROW, TPWD recommends route adjustments or construction exclusion areas be made to avoid disturbance to these species and to avoid degradation of their habitats. If disturbance cannot be avoided, then CENTERPOINT should contact the USFWS – Houston Ecological Services at (281) 286-8282 and TPWD for further coordination and to develop a plan for protection and/or salvage. If the Navasota ladies'-tresses and/or Texas prairie dawn occur within the ROW, then TPWD also recommends coordinating with USFWS and TPWD for input regarding long-term sustainability of the population and to ensure that the site does not become degraded by operation and maintenance activities. To aid in the scientific knowledge of a species' status and current range, TPWD encourages reporting encounters of federal- and state-listed species and other rare resources to the TXNDD by following the data submission link found at http://tpwd.texas.gov/txndd.

TPWD recommends CENTERPOINT survey the selected route for suitable habitat for the Houston toad and Red-cockaded Woodpecker. TPWD recommends avoiding placement of the selected route across areas of suitable habitat or surveying areas of suitable habitat for presence/absence of the Houston toad and Red-cockaded Woodpecker. The USFWS should be contacted for

species occurrence data, guidance, permitting, survey protocols, and mitigation for federally listed species.

As indicated in TPWD's July 25, 2014 letter, the project is located within the primary migration corridor for the Aransas/Wood Buffalo flock of the Whooping Crane. Suitable foraging and roosting habitat used during migration for the Whooping Crane may occur in the vicinity of an alternative route if it occurs near cropland or open waters and marshes of Gibbons Creek Reservoir or other large lakes. Where lines are placed in the vicinity of suitable stopover habitat there is increased risk for adverse collision impacts to the Whooping Crane. TPWD recommends CENTERPOINT survey the selected route for suitable foraging and stopover habitat of the Whooping Crane. To minimize the risk of collision impacts to the Whooping Crane, TPWD recommends route adjustments to avoid placement near potential stopover habitat. When route adjustments are not feasible, then TPWD recommends CENTERPOINT mark the lines with bird flight diverters to minimize potential collision impacts. Line marking is recommended where the line would occur across or near suitable foraging or roosting habitat, such as cropland or open waters and marshes of Gibbons Creek Reservoir or other large lakes. TPWD also recommends CENTERPOINT annually obtain Whooping Crane migration sighting information from the USFWS or other conservation sources to assist in locating areas within the CENTERPOINT system that could be marked to reduce collision risk to Whooping Cranes. For additional information regarding the Whooping Crane and

threats to this species, please contact Dr. Wade Harrell, the USFWS Whooping Crane Recovery Coordinator, at (361) 286-3559.

Q. DO MIGRATORY BIRDS HAVE THE POTENTIAL TO BE IMPACTED BY THE PROJECT?

A. Yes. The EA Section 4.4.4.3, regarding wildlife impacts, indicates that potential adverse impacts to migratory birds may occur if ROW clearing and construction occur during the nesting season. The EA indicates that electrocution danger would be insignificant because the distance between conductors, conductor to structure, or conductor to ground wire for the proposed 345-kV transmission line is greater than the wingspan of any bird in the area, i.e. greater than eight ft. The EA indicates that transmission line structures and wires may be a collision hazard to birds in flight. The EA indicates that the study area occurs within the Central Migratory Flyway for neo-tropical migrant birds and that the risk for bird strikes increases in the fall migration period when low visibility is common due to inclement weather conditions. The EA indicates that CENTERPOINT has an established avian program implemented by their environmental department that will evaluate avian habitats, populations, and activities within the final CCN route and coordinate with their transmission operations department to identify and implement appropriate avian protection measures, where necessary.

The EA Section 4.4.4.4 indicates that Bald Eagles (*Haliaeetus leucocephalus*) have been documented nesting near Gibbons Creek Reservoir during most years

since 1984 but that no eagle nest locations have been identified near any of the alternative routes. The EA indicates that if in the course of further biological surveys and construction activities, any Bald Eagles roost or nest trees are identified with potential impact zones (within 660 feet), CENTERPOINT would be required to notify the USFWS.

Q. WHAT DOES TPWD RECOMMEND REGARDING POTENTIAL IMPACTS TO MIGRATORY BIRDS?

A. All route alternatives cross upland woodlands, bottomland/riparian woodlands, National Wetland Inventory mapped wetlands, open water (lakes or ponds), numerous streams, and follow parallel to streams within 100 feet of the route centerline. TPWD recommends excluding vegetation clearing activities during the general bird nesting season, March through August, to avoid adverse impacts to birds. If clearing vegetation during the migratory bird nesting season is unavoidable, TPWD recommends CENTERPOINT survey the area proposed for disturbance to ensure that no nests with eggs or young will be disturbed by operations. Any vegetation (trees, shrubs, and grasses) where occupied nests are located should not be disturbed until the eggs have hatched and the young have fledged. If migratory bird species are found nesting on or adjacent to the project area, they must be dealt with in a manner consistent with the MBTA.

Additionally, to minimize potential collision impacts to resident and migratory birds, TPWD recommends CENTERPOINT proactively install bird flight

diverters when the lines are erected in areas of potential high bird use such as near lakes, rivers, streams, ponds, wetlands, and flooded pastures. This recommendation is particularly important for lines in the vicinity of major rivers and lakes, such as Gibbons Creek Reservoir. For additional information, please see the guidelines published in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* at http://www.aplic.org/.

The Bald Eagle is a migratory bird that is also protected under provisions of the Bald and Golden Eagle Protection Act. To minimize potential collision impacts to the Bald Eagle, which is also state-listed threatened, TPWD recommends CENTERPOINT install bird flight diverters where the line would occur across or near lakes, rivers and streams, such as at Gibbons Creek Reservoir. TPWD recommends CENTERPOINT construct the line following the 2006 and 2012 APLIC guidelines referenced above, in accordance with the BGEPA, and using the USFWS *National Bald Eagle Management Guidelines.*

Q. DO ANY STATE-LISTED THREATENED SPECIES HAVE THE POTENTIAL TO BE IMPACTED BY THE PROJECT?

A. Yes. The EA indicates that construction of the transmission line does not include any activities that would constitute a take of a state-listed species as defined in Section 1.01(5) of the Texas Parks and Wildlife Code. TPWD notes that Subchapter C definitions are in Section 1.101(5) of TPW Code and assumes this

statement is a typographical error. Additionally, Section 68.015 of the TPW Code regulates state-listed species. There is no provision for take (incidental or otherwise) of state-listed species, including capture, trap, take or kill or attempting to capture, trap, take or kill. The *TPWD Guidelines for Protection of State-Listed Species*, which includes a list of penalties for take of species, can be found at http://www.tpwd.texas.gov/huntwild/wild/wildlife_diversity/habitat_assessment/media/tpwd_statelisted_species.pdf.

Table 2.17 in the EA lists threatened and endangered animal species that may be present within Grimes, Harris and Waller counties. The EA indicates the following state-listed threatened species as having the potential to occur in the study area:

Birds

Bald Eagle

White-faced Ibis (*Plegadis chihi*)

White-tailed Hawk (*Buteo albicaudatus*)

Peregrine Falcon (*Falco spp*)*

Wood Stork (*Mycteria americana*)*

* Potentially in study area as non-breeding migrant or post-breeding visitor

Fishes

Creek chubsucker (*Erimyzon oblongus*)

Reptiles

Alligator snapping turtle (*Macrochelys temminckii*)

Smooth green snake (*Opheodrys vernalis*)*

Texas horned lizard (*Phrynosoma cornutum*)

Timber rattlesnake (*Crotalus horridus*)

*TPWD notes that the Smooth green snake is currently only included on the TPWD county list for Austin County and is identified as extirpated.

Mammals

Rafinesque's big-eared bat (*Corynorhinus rafinesquii*)

Mollusks

Smooth pimpleback (*Quadrula houstonensis*)*

Texas fawnsfoot (*Truncilla macrodon*)*

*Federal Candidate for Listing

The EA indicates that terrestrial species may be subject to minor temporary disturbance during construction activities, and if observed during construction activities, would be allowed to leave the study area or be relocated by a permitted individual.

Q. HOW DOES TPWD RECOMMEND MINIMIZING IMPACTS TO STATE-LISTED THREATENED SPECIES?

A. State-listed Birds

Please refer to the answer to Question 17 (migratory bird recommendations). Because the state-listed threatened White-faced Ibis and Wood Stork are large bodied birds that are less agile during landing and departure from feeding areas, TPWD recommends CENTERPOINT mark the lines with bird flight diverters to minimize potential collision impacts. Line marking is recommended where the line would occur across or near lake edges, wetlands, swamps and marshes.

Timber Rattlesnake and Texas Horned Lizard

The Timber rattlesnake is a long-lived species with a high age at maturity and low annual fecundity, thus survival through adulthood is important to population viability. The Timber rattlesnake is a slow-moving, cryptic species that is less able to readily escape from heavy machinery than other wildlife.

The Texas horned lizard is at risk for being impacted by construction activities due to its limited mobility and because it hibernates underground. Texas horned lizards are generally active from mid-April through September. At that time of year, they may be able to avoid slow (less than 15 miles per hour) moving equipment, although when a threat is perceived they often flatten themselves against the ground to blend into their surroundings. The remainder of the year, this species hibernates only a few inches underground and will be susceptible to earth moving equipment and compaction. Various small vertebrates including

snakes, lizards, toads and mice fall into trenches and become trapped. Wildlife unable to escape from trenches are susceptible to loss from backfilling activities, exposure to elements, starvation, dehydration, and predation by other wildlife.

Once an alternative route is selected, TPWD recommends CENTERPOINT survey the route to determine the potential of the site to support state-listed species or their habitat, including the Texas horned lizard and Timber rattlesnake. Surveying the route prior to construction would aid in protecting state-listed species from potential take. Please be aware that species not occurring during site surveys may utilize the habitat within the project area at times beyond those during which the survey was conducted, such as seasonally or nocturnally.

TPWD recommends avoiding disturbance to state-listed species including the Timber rattlesnake and Texas horned lizard, during clearing, construction, operation and maintenance of the proposed line and ROW. TPWD recommends a biological monitor be present during construction to assist in detecting state-listed species in the ROW. If the presence of a biological monitor during construction is not feasible, state-listed threatened species observed during construction should be allowed to safely leave the site or be translocated by a permitted individual to a nearby area with similar habitat that would not be disturbed during construction. TPWD recommends that any translocations of reptiles including the Texas horned lizards or Timber rattlesnakes be the minimum distance possible no greater than one mile, preferably within 100-200 yards. As a reminder, for purposes of relocation, surveys, monitoring, and research, terrestrial state-listed species may

only be handled by persons permitted through the TPWD Wildlife Permits Office, http://www.tpwd.texas.gov/business/permits/land/wildlife/research/.

Because snakes are generally perceived as a threat and killed when encountered during clearing or construction, TPWD recommends CENTERPOINT inform employees and contractors of the potential for the state-listed threatened Timber rattlesnake to occur in the study area. Contractors should be advised to avoid impacts to this snake. Compared to other rattlesnakes, the Timber rattlesnake is a rather docile species. Injury to humans usually occurs when the snake becomes agitated following harassment or when someone attempts to handle a recently dead snake that still contains its bite reflex. Therefore, contractors should avoid contact with the species if encountered and allow the snake to safely leave the premises.

If trenching is involved in construction such as where the line may be placed underground, TPWD recommends that contractors keep trenching and backfilling crews close together to minimize the amount of trenches left open at any given time during construction. TPWD recommends that any open trenches or excavation areas be covered overnight and/or inspected every morning to ensure no reptiles or other wildlife species have been trapped. Trenches left open for more than two daylight hours should be inspected for the presence of trapped reptiles prior to backfilling. If trenches cannot be backfilled the day of initial trenching, then escape ramps should be installed at least every 90 meters. Escape

ramps can be short lateral trenches or wooden planks sloping to the surface at an angle of less than 45 degrees (1:1).

The EA Section 1.3.6 *Cleanup* and Section 4.4.2 *Impacts on Soils* indicate that soil stabilization and reestablishing vegetation cover will follow the procedures dictated in a storm water pollution prevention plan, if required, incorporating temporary and permanent best management practices to minimize soil erosion and re-vegetation, naturally or by seeding. Please be aware that the netting found in many erosion control blankets or mats poses an entanglement hazard to wildlife, particularly snakes, including the Timber rattlesnake.

For soil stabilization and/or revegetation of disturbed areas within the proposed project area, TPWD recommends that CENTERPOINT utilize erosion and seed/mulch stabilization materials that avoid entanglement hazards to snakes and other wildlife species. TPWD recommends the use of hydromulching and/or hydroseeding to reduce entanglement risks to wildlife. If erosion control blankets or mats will be used during this project, CENTERPOINT should utilize products that contain no netting or contain loosely woven, natural fiber netting in which the netting design allows the threads to move, therefore allowing expansion of the netting openings. Overall, plastic netting should be avoided.

A mixture of cover, food sources, and open ground is important to the Texas horned lizard and its food source, the Harvester ant, thus TPWD recommends that

disturbed areas within suitable habitat for the Texas horned lizard be re-vegetated with site-specific native, patchy vegetation rather than sod-forming grasses.

Alligator Snapping Turtle and Freshwater Mussels

The Alligator snapping turtle is primarily an aquatic species. Protections to avoid and minimize impacts to aquatic resources identified in the EA include spanning water resources and minimizing sedimentation to waterways. If temporary or permanent crossings or structures are required in waters, then TPWD recommends avoiding impacts to state-listed species by surveying impact areas prior to disturbance, constructing stream crossings that do not obstruct flow, and ensuring that permanent or temporary fills do not trample aquatic species including the Alligator snapping turtle and freshwater mussels, if occurring.

Rafinesque's Big-eared Bat

TPWD recommends CENTERPOINT survey the selected route for cavity trees, culverts, bridges or abandoned structures that may provide suitable habitat for bats and avoid disturbance to these areas. If bats are found inhabiting trees or structures that would be removed within the limits of the selected route, TPWD recommends coordination with our office or with experts at Bat Conservation International to ensure that excluding bats from structures or cavities can be conducted to minimize impacts to the species and to ensure that activities prevent possible spread of White-nose syndrome, a fungus related disease which affects bats.

Q. DO ANY RARE SPECIES HAVE THE POTENTIAL TO BE IMPACTED BY THE PROJECT?

A. Yes. The EA Section 2.4.4.4 indicates the following rare species as having the potential to occur in the study area:

Amphibians

Southern crawfish frog (*Lithobates areolatus areolatus*)

Birds

Henslow's Sparrow (*Ammodramus henslowii*)

Black Rail (*Laterallus jamaicensis*)

Mountain Plover (*Charadrius montanus*)

Snowy Plover (*Charadrius alexandrinus*)

Sprague's Pipit (*Anthus spragueii*)*

* Federal candidate species

Fishes

American eel (*Anguilla rostrata*)

Mammals

Plains spotted skunk (*Spilogale putorius interrupta*)

Southeastern myotis bat (*Myotis austroriparius*)

Mollusks

Little spectaclecase (*Villosa lienosa*)*

Wabash pigtoe (*Fusconaia flava*)*

*TPWD notes that this species is no longer included on the TPWD county list of rare species.

Plants

Branched gay-feather (*Liatris cymosa*)

Navasota false foxglove (*Agalinis navasotensis*)

Texas meadow-rue (*Thalictrum texanum*)

Coastal gay-feather (*Liatris bracteata*)

Florida ladies-tresses (*Spiranthes brevilabris var. floridana*)

Giant sharpstem umbrella sedge (*Cyperus cephalanthus*)

Houston daisy (*Rayjacksonia aurea*)

Neglected coneflower (*Echinacea paradoxa var. neglecta*)

Panicled indigobush (*Amorpha paniculata*)

Texas ladies'-tresses (*Spiranthes brevilabris var. brevilabris*)

Texas windmill-grass (*Chloris texensis*)

Threeflower broomweed (*Thurovia triflora*)

Shinner's sunflower (*Helianthus occidentalis ssp plantagineus*)

Q. HOW DOES TPWD RECOMMEND MINIMIZING IMPACTS TO RARE SPECIES?

A. In addition to federal- and state-protected species, Texas contains over 1,300 species that are considered to be SGCN that, due to limited distributions and/or declining populations, may face threat of extirpation or extinction but lack the legal protections given to threatened or endangered species. Special landscape features, natural plant communities, and SGCN are rare resources tracked by TPWD, and TPWD actively promotes conservation of these rare resources. TPWD considers it important to minimize impacts to special landscape features, natural plant communities, and SGCN to reduce the likelihood of endangerment.

The EA Section 4.4.4.4 acknowledges that occurrences of sensitive vegetation communities and SGCN are located within the study area and that Segment G of Routes 22, 23, and 24 crosses a small portion of a known occurrence of a Houston Coastal Prairie. The EA indicates that project activities are not likely to significantly impact prairie vegetation. TPWD recommends avoiding placement of the route across the mapped Houston Coastal Prairie along Segment G or other similar sites exhibiting native prairie species. Avoidance is preferred because construction and maintenance activities can adversely alter the species composition of a site by inadvertently introducing invasive species to the site via equipment.

In addition to threatened and endangered species, TPWD recommends that pre-construction surveys of the approved route include surveys to determine whether rare resources or suitable habitat for SGCN would be impacted as a result of the proposed project. The presence of a biological monitor is recommended during construction to identify wildlife and assist contractors with avoiding impacts.

TPWD recommends that prior to construction, the selected route be surveyed during the season of highest detection for the above-listed rare plant species, typically during the flowering period for each species. Where occurring within the ROW, TPWD recommends protecting rare plants from construction and maintenance disturbances by marking or fencing and instructing crews to avoid any harm. If disturbance of rare plants cannot be avoided, then CENTERPOINT should contact this office for further coordination and to develop a plan for protection and/or possible salvage of plants or seeds. Areas exhibiting a native grass and forbs component should be protected from disturbance and from introduction of non-native vegetation during construction, maintenance, and operation activities.

Q. DO PROJECT ACTIVITIES HAVE THE POTENTIAL TO OCCUR WITHIN INLAND WATERS AND ENABLE THE SPREAD OF AQUATIC INVASIVE SPECIES?

A. Yes. The zebra mussel, a highly invasive aquatic species, has been documented in Texas lakes (see map at http://tpwd.texas.gov/huntwild/wild/species/exotic/) including lakes in the Red River Basin, Trinity River Basin, and Brazos River

Basin. The zebra mussel larvae and post-larval forms are known to spread between waters via contaminated equipment; post-larval forms can survive several days out of water before being carried to other waters. Post-larval zebra mussels attach to hard surfaces, such as boats, intake structures and piers. The larvae, called veligers, are microscopic and are visually undetectable, thus they are unknowingly carried to other waters via live wells, bait buckets, scuba equipment, and anything that carries small amounts of water. Statewide rules have been enacted per Texas Administrative Code Title 31, Part 2, Chapter 57, Subchapter N that requires persons leaving or approaching public fresh water to drain all water from their vessels and on-board receptacles (includes live wells, bilges, motors and any other receptacles or water-intake systems coming into contact with public waters). This rule applies to all sites where boats can be launched and includes all types and sizes of boats whether powered or not, personal watercraft, sailboats, kayaks/canoes, or any other vessel used to travel on public waters. Furthermore, per TAC Title 31, Part 2, Chapter 57, Subchapter A, it is an offense for any person to possess, transport, or release into the water of this state any species, hybrid of a species, subspecies, eggs, seeds, or any part of any species defined as a harmful or potentially harmful exotic fish, shellfish, or aquatic plant. This rule applies not only to zebra mussels (live or dead) and their larvae but also to any species (or fragments thereof) designated as harmful or potentially harmful under this subchapter (e.g., giant salvinia, hydrilla, Eurasian watermilfoil).

The EA indicates that CENTERPOINT proposes to span all surface waters with structure foundations located outside of the ordinary high water mark of surface waters. However, construction and maintenance of transmission lines may require equipment to come in contact with inland streams or water bodies such as at temporary or permanent waterbody crossings.

Q. HOW DOES TPWD RECOMMEND MINIMIZING THE RISK OF SPREADING INVASIVE AQUATIC SPECIES?

A. To minimize the risk of transporting zebra mussels on construction equipment and materials, TPWD recommends CENTERPOINT review and adhere to the *TPWD Clean/Drain/Dry Procedures and Zebra Mussel Decontamination Procedures for Contractors Working in Inland Public Waters* for equipment and materials entering or leaving waters at the project site. The procedures can be obtained at http://tpwd.texas.gov/huntwild/wild/wildlife_diversity/habitat_assessment/media/WHAB_ZebraMussel_CleanDrainDryDecontaminationProcedures__Final_02052015.pdf.

Q. ARE THERE ANY TPWD OWNED OR MANAGED PROPERTIES WITHIN THE STUDY AREA?

A. Yes. The EA Section 4.3.1.3 indicates that the Anderson Historic District is crossed by route segment O2. TPWD notes that Figure 1-5 of the EA indicates that the Anderson Historic District is crossed by both segments O2 and M2. The EA Section 4.3.1.4 concludes that Route 14 crosses the Anderson Historic

District. TPWD notes that Routes 7, 8, 9, 10, 14, 15, 17, and 18 utilize Segments O2 and/or M2 and would cross the Anderson Historic District as mapped on Figure 5-1. Fanthorp Inn State Historic Site, a TPWD owned and managed property, occurs within the study area in the Anderson Historic District and is located approximately 0.45 mi from Segment M2 (Routes 7, 8, 9, 14, 15, 17, and 18). The 6-acre site demonstrates 19th century life at an early Texas stagecoach stop and family home and offers stagecoach rides.

Q. HOW DOES TPWD RECOMMEND MINIMIZING IMPACTS TO TPWD OWNED OR MANAGED PROPERTY?

A. Chapter 26 of the Parks and Wildlife Code requires that before a state agency can approve any project that will result in the use or taking of public land designated and used as a park, public recreation area, scientific area, wildlife refuge, or historic site, that state agency must provide certain notices to the public, conduct a hearing, and render a finding that there is no feasible and prudent alternative and that the project includes all reasonable planning to minimize harm to the property. If Routes 7, 8, 9, 14, 15, 17, or 18 are selected, TPWD recommends that CENTERPOINT coordinate with David Riskind, TPWD State Parks Division, at (512) 389-4897 to minimize visual impact on views from the site and stagecoach routes.

Q. ARE THERE ANY OTHER PROPERTIES POTENTIALLY SUBJECT TO PARKS AND WILDLIFE CODE CHAPTER 26 WITHIN THE STUDY AREA?

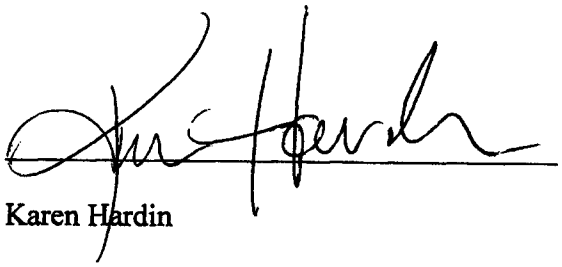
A. Yes. The study area contains city and/or county park properties. The TPWD State Parks Division maintains the Land and Water Resources Conservation and Recreation Plan (LWRCRP) inventory, a GIS layer that inventories land and water associated with historical, natural, recreational, and wildlife resources that are owned by governmental entities and non-profit entities that offer public access to land or water. A property not mapped in Figure 5-1 of the EA but included in the LWRCRP inventory and identified in TPWD's comment letter of July 25, 2014, is John Paul's Landing. This Harris County property appears to be slated for development into a stormwater detention facility and park and is crossed by Segment B adjacent to an existing 345-kV transmission line that also crosses John Paul's Landing.

Q. WHAT MITIGATION PLAN DOES TPWD RECOMMEND FOR THIS PROJECT?

A. TPWD recommends CENTERPOINT prepare a mitigation plan to provide compensatory mitigation for those habitats where impacts from the transmission line cannot be avoided or minimized. This would include impacts to species and habitats covered under federal law (wetlands and associated habitats, threatened or endangered species) and state resource habitat types not covered by state or federal law (riparian areas, native prairies). At a minimum, TPWD recommends a replacement ratio of 1:1 for state resource habitat types.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.



Karen Hardin