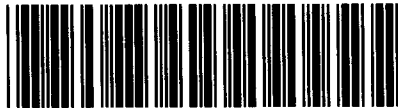




Control Number: 41606



Item Number: 1227

Addendum StartPage: 0

SOAH DOCKET NO. 473-13-5207
PUC DOCKET NO. 41606

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PUC-H. FIDELITY & SUTHERLAND

APPLICATION OF ELECTRIC
TRANSMISSION TEXAS, LLC AND
SHARYLAND UTILITIES, L.P. TO
AMEND THEIR CERTIFICATES OF
CONVENIENCE AND NECESSITY FOR
THE PROPOSED NORTH EDINBURG
TO LOMA ALTA DOUBLE-CIRCUIT
345-KV TRANSMISSION LINE IN
HIDALGO AND CAMERON COUNTIES,
TEXAS

§
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§

BEFORE THE STATE OFFICE

OF

ADMINISTRATIVE HEARINGS

REBUTTAL TESTIMONY OF ROB R. REID
ON BEHALF OF ELECTRIC TRANSMISSION
TEXAS, LLC AND SHARYLAND UTILITIES, L.P.

NOVEMBER 26, 2013

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1227

**SOAH DOCKET NO. 473-13-5207
PUC DOCKET NO. 41606**

JOINT APPLICATION OF	§	
ELECTRIC TRANSMISSION TEXAS,	§	
LLC AND SHARYLAND UTILITIES,	§	BEFORE THE STATE OFFICE
L.P. TO AMEND THEIR	§	
CERTIFICATES OF CONVENIENCE	§	
AND NECESSITY FOR THE	§	OF
PROPOSED NORTH EDINBURG TO	§	
LOMA ALTA DOUBLE-CIRCUIT 345-	§	
KV TRANSMISSION LINE IN	§	ADMINISTRATIVE HEARINGS
HIDALGO AND CAMERON	§	
COUNTIES, TEXAS		

REBUTTAL TESTIMONY AND EXHIBITS

OF

ROB R. REID

ON BEHALF OF

ELECTRIC TRANSMISSION TEXAS, LLC

AND

SHARYLAND UTILITIES, L.P.

NOVEMBER 26, 2013

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EXHIBITS

<u>EXHIBIT</u>	<u>DESCRIPTION</u>
EXHIBIT RRR-RT-1	Table 4-1S Modified

I. INTRODUCTION

1 Q. PLEASE STATE YOUR NAME AND OCCUPATION.

2 A. My name is Rob R. Reid. I am Vice President and Senior Project Manager with
3 POWER Engineers, Inc.

4 Q. ARE YOU THE SAME ROB R. REID THAT PROVIDED DIRECT TESTIMONY
5 AND ROUTE ADEQUACY TESTIMONY IN THIS DOCKET?

6 A. Yes, I am.

II. PURPOSE OF TESTIMONY

7 Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

8 A. The purpose of my rebuttal testimony is to respond to arguments raised by numerous
9 intervenor witnesses and intervenor statements of position concerning the routing of
10 the project in this case. Many of them raise common concerns, for example, that
11 routing the project across their property will disrupt future development plans or
12 devalue their property. Accordingly, I will first address their arguments by grouping
13 together those with common concerns and responding on that basis. Then, where
14 appropriate, I will address individual intervenor points and arguments. I also address
15 the comments and recommendations Texas Parks and Wildlife Department (TPWD)
16 raised in its letter of comments and recommendations, and in the testimony of TPWD
17 witness Russell Hooten.

III. REBUTTAL TO GENERAL POSITIONS COMMON TO INTERVENORS' TESTIMONY

1 Q. A NUMBER OF INTERVENORS AND PERSONS TESTIFYING ON THEIR
2 BEHALF MENTION OR DISCUSS THEIR CONCERNS ABOUT THE VISUAL
3 IMPACTS ASSOCIATED WITH TRANSMISSION LINES. DO YOU BELIEVE
4 THE AESTHETIC BEAUTY OF PRIVATE PROPERTIES AND "RUINING THE
5 VIEW" SHOULD BE SUFFICIENT CONSIDERATION FOR REJECTING ANY
6 OF THE ALTERNATIVE ROUTES?

7 A. No, I do not. I understand many individuals do not like to look at transmission lines,
8 especially on their private property. It is difficult at best to attempt to assess aesthetic
9 impacts to private individuals. Federal agencies and the PUC, which consider
10 aesthetics in their actions, usually evaluate aesthetics from a public standpoint, and
11 then consider the balancing of aesthetic impacts with numerous other appropriate
12 considerations. Like personal private recreational uses, personal aesthetics and
13 private views provide little objective basis for evaluating alternative routing options.

14 Q. SEVERAL INTERVENORS AND PERSONS TESTIFYING ON THEIR BEHALF
15 MENTION OR DISCUSS THEIR CONCERNS WITH POTENTIAL IMPACTS TO
16 WILDLIFE HABITAT, HABITAT FRAGMENTATION AND
17 THREATENED/ENDANGERED SPECIES. HOW DO YOU RESPOND?

18 A. The construction of this line will require the removal of some woody vegetation/brush
19 within the right of way (ROW). Many landowners in this region of Texas have spent
20 considerable resources implementing brush control measures on their land for
21 agricultural production, wildlife habitat enhancement and/or cattle grazing.

1 Depending on the final approved route, this line may provide some limited assistance
2 with brush control.

3 Wherever reasonable and practical, POWER, ETT and Sharyland delineated
4 alternative links/routes to parallel existing cleared ROWs, cleared fence
5 lines/property lines, wildlife management/brush control clearings, roads, etc., to limit
6 the amount of totally new fragmentation. Where paralleling such facilities/features,
7 the existing fragmentation would be increased/widened. Many wildlife species are
8 "edge" adapted species, which may benefit from the habitat edge effect resulting from
9 creation of the cleared ROW.

10 Several state and federal listed threatened/endangered species are known to, or
11 potentially occur within the study area, as discussed in POWER's Environmental
12 Assessment (EA). At the environmental planning stage of the project, before the
13 Commission selects a route, it is simply not possible to conduct on-the-ground
14 observations or surveys on private property throughout the study area and along all
15 alternative routes. ETT and Sharyland do not have access to private property. It is
16 premature to conduct on-the-ground investigations on private property until the
17 Commission selects and approves a route.

18 Q. SEVERAL INTERVENORS HAVE EXPRESSED CONCERNS REGARDING
19 THE IMPACT OF THE PROPOSED TRANSMISSION LINE ON HUNTING ON
20 THEIR PROPERTY. DO YOU HAVE A RESPONSE?

21 A. Yes. I appreciate how important hunting is to the community on both a personal and
22 commercial level and I believe the Joint Applicants will work to avoid adversely

1 affecting hunting activities. Construction of the proposed line should not have any
2 long-term impact on hunting activities. Sometimes trees must be removed during
3 construction, but brush and groundcover that serve as habitat for wildlife often
4 remains intact, which will mitigate the impact on such wildlife. Joint Applicants will
5 also work to re-vegetate affected areas as soon as possible after construction and will
6 work with landowners to determine appropriate seed mixtures to return property to its
7 previous or preferred condition.

8 Once construction is complete, the line should not impede the movement of
9 wildlife through any new ROW, and might even improve certain types of habitat by
10 creating an "edge effect" where vegetation can grow that is favorable to some types
11 of wildlife. In addition, hunters often place hunting blinds and game feeders along
12 and within transmission line ROW because the new ROW offers additional clearing,
13 which can open up more acreage to hunting activities. I believe hunting activities
14 should be compatible with any transmission lines placed on landowners' property.

15 Q. DOES A TRANSMISSION LINE TAKE LAND AWAY FROM A LANDOWNER
16 OR PREVENT A LANDOWNER FROM CONTINUING TO USE IT FOR
17 AGRICULTURAL PURPOSES INCLUDING CITRUS FARMING?

18 A. No. The landowner remains the rightful owner of the land within a transmission line
19 ROW and can continue to use the land for cattle grazing, hunting and agricultural
20 purposes after construction. Only a small amount of land around the transmission
21 structures will be lost to grazing or cultivation. ETT and Sharyland's monopole
22 structures are expected to be spaced approximately 850 feet apart and to occupy an

1 area approximately ten feet in diameter. Utility companies in Texas regularly deal
2 with electric lines crossing agricultural lands and loss of cropland from the surface
3 area of the structures is something addressed during easement acquisition. Citrus trees
4 are generally low growing and are regularly pruned. Although some citrus trees may
5 need to be removed for access along the ROW and for construction of the
6 transmission structures themselves, in some locations citrus trees can continue to
7 grow within the ROW. Some modification to pruning and chemical spraying may
8 need to be implemented by the landowners so as not to interfere with the transmission
9 conductors.

10 Q. CAN LANDOWNERS THAT MANAGE THEIR CROPS THROUGH AERIAL
11 APPLICATION OR CROP DUSTING CONTINUE TO DO SO AFTER WITH A
12 TRANSMISSION LINE ON THEIR PROPERTY?

13 A. Yes, in most cases aerial application and crop dusting can still be applied. If there are
14 areas that can no longer be accessed near the transmission lines, they can still be
15 managed with on the ground mechanical machines.

16 Q. A NUMBER OF THE INTERVENORS ASSERT THE LINE SHOULD NOT BE
17 PLACED ON THEIR PROPERTY BECAUSE OF THEIR PLANNED "FUTURE"
18 LAND USES AND POTENTIAL FUTURE LAND USES ALONG SOME OF THE
19 ROUTE LINKS. HOW DO YOU RESPOND?

20 A. I do not believe that speculative and future land uses should be a consideration in
21 approving a route for this project, because of the uncertainty of future actions. In

1 prior dockets (e.g., Docket 29684 and others) the Commission has specifically stated
2 future land use is not a consideration in their CCN approval process.

3 Q. A NUMBER OF THE INTERVENORS ASSERT THE LINE SHOULD NOT BE
4 PLACED ON THEIR PROPERTY BECAUSE IT WILL DEVALUE THE
5 PROPERTY. HOW DO YOU RESPOND?

6 A. The PUC does not consider property values as a routing criterion. Transmission lines
7 typically do not have a significant adverse impact on development that occurs after
8 construction of the lines.

9 Q. A NUMBER OF INTERVENOR WITNESSES STATE THAT A ROUTE
10 CROSSING THEIR PROPERTIES WOULD NOT BE IN COMPLIANCE WITH
11 "PRUDENT AVOIDANCE." DO YOU AGREE?

12 A. No. Prudent Avoidance is defined as: "The limiting of exposures to electric and
13 magnetic fields that can be avoided with reasonable investments of money and
14 effort." Wherever reasonable and practical, POWER, ETT and Sharyland delineated
15 alternative routes to avoid close proximity to habitable structures. Although portions
16 of the alternative routes occur in developed and developing areas, I believe all of the
17 links/routes filed in this docket comply with "Prudent Avoidance," because of the
18 routing methodology utilized for the project.

1 Q. SEVERAL INTERVENOR WITNESSES ALSO STATE THAT THE LINE WILL
2 RUIN THE "ENVIRONMENTAL INTEGRITY" OF THEIR PROPERTY. HOW
3 DO YOU RESPOND?

4 A. The term "Environmental Integrity" has not been defined by the PUC to my
5 knowledge. In my opinion, potential impacts to the integrity of the environment
6 relates to all of the interrelated components of the entire ecosystem. The ecosystem
7 does not stop at property lines. One of the primary purposes of the EA included with
8 Joint Applicants' application in this proceeding is to assess potential environmental
9 constraints and impacts relating to the Project. POWER has evaluated each of the
10 routes that Joint Applicants have proposed in this proceeding from an environmental
11 and land use perspective and has made route modifications and recommendations
12 when appropriate to mitigate potential environmental impacts.

13 Q. A NUMBER OF INTERVENOR WITNESSES MENTION THEIR CONCERNS
14 WITH PROXIMITY OF HABITABLE STRUCTURES INCLUDING SCHOOLS.
15 DID POWER, ETT AND SHARYLAND CONSIDER HABITABLE STRUCTURES
16 DURING ROUTE DELINEATION?

17 A. Yes. As discussed in Section 2.2.2.1 of the EA, the central portion of the project area
18 is composed of high density residential and commercial development. Wherever
19 possible, POWER, ETT and Sharyland avoided routing the line near habitable
20 structures including schools. However, due to the nature of the extensive
21 development, there are a considerable number of habitable structures within 500 feet
22 of the proposed routes.

1 Q. HOW MANY HABITABLE STRUCTURES ARE LOCATED WITHIN 500 FEET
2 OF THE PROPOSED ROUTES?

3 A. The number of habitable structures within 500 feet of the proposed routes varies by
4 route and ranges from a low of 465 (Route 32) to a high of 1,818 (Route 26). Table
5 4-1 in the EA shows the number of habitable structures within 500 feet of the routes
6 that were filed in the CCN application. Table 4-1S Modified, which is attached to my
7 testimony as Exhibit RRR-RT-1, shows the number of habitable structures within 500
8 feet of the supplemental alternative routes that were submitted in the amended CCN
9 application in response to SOAH Order No. 6, as well as a modification of Route 3S
10 discussed below.

RESPONSE TO RHODES ALLIANCE ET AL.

IV. REBUTTAL TO TESTIMONY OF MICHAEL RHODES, ML RHODES, LTD. AND RHODES ENTERPRISES, INC.

11 Q. AFTER REVIEWING THE RECOMMENDATIONS ON PAGES 12-14 OF MR.
12 RHODES' TESTIMONY, HOW DO YOU RESPOND?

13 A. Mr. Rhodes supports a modified version of the supplemental Route 3S. Table 4-1S
14 Modified includes the Environmental Data for Route Evaluation for Supplemental
15 Route 3S Modified as described by Mr. Rhodes.

16 Q. HOW MANY HABITABLE STRUCTURES WOULD POTENTIALLY HAVE TO
17 BE REMOVED OR RELOCATED IF ROUTE 3S MODIFIED WERE SELECTED?

18 A. There are a maximum of six such structures.

1 Q. WHAT IS THE NATURE OF THESE STRUCTURES?

2 A. All six structures to be potentially moved on Route 3S Modified appear to be mobile
3 homes. Five are in a mobile home park and, based on current information, the other
4 may no longer be there.

5 Q. HOW DO YOU RESPOND TO THE OTHER RECOMMENDATIONS ON PAGES
6 12-14 OF MR. RHODES' TESTIMONY?

7 A. Although Mr. Rhodes does not support any of the western routes including Route 32,
8 he proposes two new link revisions (Alternatives 1 and 2) if a western route is chosen.

9 Q. ARE MR. RHODES' ALTERNATIVES VIABLE?

10 A. No. Alternatives 1 and 2 require the new 345kV line to be co-located on the same
11 structures with an existing 138kV transmission line. There is not enough space for a
12 double-circuit 345kV ROW within the existing 138kV ROW that is located on the
13 southern edge of Bentson Palm Community Park and between and over the two
14 community lakes.

V. REBUTTAL TO TESTIMONY OF RUDOLPH K. "RUDI" REINECKE

15 Q. WHAT ARE YOUR COMMENTS CONCERNING MR. REINECKE'S
16 ASSERTION ON PAGES 3 AND 6 OF HIS TESTIMONY REGARDING MOBILE
17 HOME/RECREATION VEHICLES AND THEIR OCCUPANTS?

18 A. I agree that these are habitable structures; however, I do not believe that the PUC has
19 defined a hierarchy of importance among the various types of habitable structures.

**VI. RESPONSE TO TESTIMONY OF JEFFERY GLASSBERG (NORTH
AMERICAN BUTTERFLY ASSOCIATION)**

1 Q. MR. GLASSBERG CLAIMS THAT CONSTRUCTING THE PROPOSED
2 TRANSMISSION LINES IN FRONT OF THE NATIONAL BUTTERFLY
3 CENTER WILL ULTIMATELY COST THE LOWER RIO GRANDE VALLEY
4 MORE THAN \$150,000,000 PER YEAR IN LOST ECOTOURISM REVENUE.
5 HOW DO YOU RESPOND?

6 A. Mr. Glassberg claims that if Link 84b is selected, it will "doom" the National
7 Butterfly Center (NBC) because "it is not possible to have successful major tourist
8 attractions where the entrance is spanned by giant transmission lines that are
9 perceived by the public to be dangerous," and thereby result in \$150,000,000 per year
10 in lost revenue associated with the NBC.

11 This claim is untenable for three reasons. First, the basis for this claim is that
12 the link in question (Link 84b) crosses the "entrance" of the National Butterfly
13 Center. But it does not. Link 84b is located on the opposite side of Military Road, in
14 an empty field that, according to the Hidalgo County tax rolls, belongs to "L C
15 Castillo Corporation."

16 Second, I do not believe Link 84b would jeopardize the successful future
17 operation of the NBC. The support for Mr. Glassberg's claim is a letter from
18 "tourism expert Larry Ditto" attached to Mr. Glassberg's testimony. Based on the
19 information provided, however, Mr. Ditto does not appear to be an expert in tourism.
20 He never claims to be an expert, and Mr. Glassberg's testimony does not provide any
21 credentials to support this claim of expertise. On the contrary, Mr. Ditto appears to

1 be a retired U.S. Fish and Wildlife Service biologist and nature photographer (as also
2 evidenced by the letterhead: "Larry Ditto Nature Photography"), not a tourism expert.
3 Similarly, he does not seem to be fully aware of the facts of this case. Like Mr.
4 Glassberg, he claims that eco-tourists would have to pass underneath Link 84b to
5 access the NBC, a fact that is not true.

6 Third, the substance of Mr. Ditto's letter does not match the extent of Mr.
7 Glassberg's claim. For example, Mr. Ditto claims that the **total** annual ecotourism
8 income to the entire Lower Rio Grande Valley region is \$50 to \$100 million, based
9 on research done in the mid- to late-1990s. Mr. Glassberg claims, by contrast, that
10 the annual ecotourism attributable to the NBC **alone** will be \$150 million by 2020,
11 more than all the ecotourism income of the Lower Rio Grande Valley combined,
12 based on unsubstantiated claims by Mr. Glassberg of a projected tenfold increase of
13 visitors to the NBC in the next seven years. Similarly, Mr. Ditto claims that Link 84b
14 would "negatively impact" tourism because it would "significantly reduce" the
15 natural, aesthetic appeal of lands with habitats suitable for ecotourism and that many
16 eco-tourists have a "negative view" of environmental factors with perceived health
17 effects. Mr. Glassberg uses these two statements to claim that Mr. Ditto claims Link
18 84b would "doom" the NBC because it would be impossible to have a successful
19 ecotourism attraction in light of Link 84b. It appears that Mr. Glassberg is grossly
20 overstating Mr. Ditto's claims.

**VII. RESPONSE TO TESTIMONY OF J.P. VILLARREAL (SOUTH TEXAS
INDEPENDENT SCHOOL DISTRICT)**

1 Q. AFTER REVIEWING MR. VILLARREAL'S TESTIMONY, DO YOU HAVE ANY
2 COMMENTS CONCERNING LINK 296 AND HOW IT WILL AFFECT THE
3 PROPOSED ACADEMY FOR MEDICAL PROFESSIONS (ACADEMY) AND
4 FUTURE JUNIOR HIGH SCHOOL?

5 A. Yes. Based on Exhibit C in his testimony, it appears Link 296 would impact the
6 Academy that began construction in October 2013.

7 Q. COULD LINK 296 BE MODIFIED TO AVOID IMPACTING THE CURRENT
8 DESIGN DEPICTED IN EXHIBIT C?

9 A. Yes. If a route with Link 296 is selected by the PUC, Link 296 could be modified to
10 avoid the Academy by turning north-northeast and following the north-northwest
11 boundary of the Academy and connecting with either Link 305 or 306. Link 296 is
12 used in Routes 1, 3, 9, and 15; and is not used in any of the supplemental alternative
13 routes 1S through 10S.

**VIII. RESPONSE TO TESTIMONY OF JOHN S.C. HERRON
(THE NATURE CONSERVANCY (TNC))**

14 Q. MR. HERRON, ON BEHALF OF THE NATURE CONSERVANCY, CLAIMS
15 THAT THE PROPOSED PROJECT WILL CAUSE IRREPARABLE DAMAGE TO
16 THE BIOLOGICAL INTEGRITY OF THE CHIHUAHUA WOOD PRESERVE.
17 HOW DO YOU RESPOND?

18 A. I believe the mitigation measures Joint Applicants have already described in the EA
19 are sufficient to address many of Mr. Herron's concerns, and will employ best

1 management practices to the extent feasible. Joint Applicants will also attempt to
2 make all reasonable modifications to accommodate Mr. Herron's concerns and avoid
3 unnecessary damage to the area's ecosystem. Additionally, while some links do cross
4 the boundary of the Preserve, several routes, including Route 32, do not directly
5 impact it. Any direct encroachment from these routes would be minor, and according
6 to Mr. Herron would result in less clearing of the rare Tamaulipan thornscrub
7 ecological community and loss of wildlife habitat because they cross already
8 disturbed farmland.

9 Q. DO YOU HAVE ANY OTHER COMMENTS REGARDING MR. HERRON'S
10 TESTIMONY?

11 A. Yes. Link 72 is located within the TNC property; however, it follows an existing
12 138kV line. Links 67b, 343, 71a and 71b are not on the TNC property and are not
13 abutting the TNC property.

**IX. RESPONSE TO TESTIMONY OF ANDREA B. YOUNG
(VALLEY RACE PARK)**

14 Q. DO YOU HAVE ANY COMMENTS REGARDING MS. YOUNG'S
15 TESTIMONY?

16 A. Yes. None of the proposed links, including Link 259, nor any of the ROW associated
17 with Link 259 will be located on the Valley Race Park.

**X. REBUTTAL TO TESTIMONY OF JOHN WOMACK
(MIL ENCINOS, LTD AND G.E. BELL PROPERTIES LTD)**

1 Q. HAVE YOU REVIEWED THE TESTIMONY OF JOHN WOMACK ON BEHALF
2 OF MIL ENCINOS, LTD, AND IF SO, HOW DO YOU RESPOND?

3 A. Yes. POWER and Joint Applicants revised links on the Bell tract as a result of input
4 from the Bell brothers during the Public Open House Meetings. Link 56 that was
5 displayed at the Open House Meetings originally followed the northern and western
6 property lines and it was subsequently moved to the eastern property line at the
7 request of the two landowners. It is my experience in Texas that commercial and
8 residential developments regularly include transmission lines in their planning
9 process and that developments can and do occur around transmission lines. Good
10 examples in the Austin area include The Domain, Barton Creek, Lost Creek and
11 Steiner Ranch.

XI. REBUTTAL TO TESTIMONY OF JIMMIE AND BARBARA STEIDINGER

12 Q. DO YOU AGREE WITH THE STATEMENT ON PAGE 6 LINES 31-32 THAT
13 STATE THAT LINKS 148, 151, 152, 153, 154 AND 155 WILL BOX IN THEIR
14 PROPERTY?

15 A. No. If Links 152 and 155 are used, Links 151 and 154 will not be used. If Link 148
16 is used, Link 153 would not be used.

**XII. RESPONSE TO TEXAS PARKS AND WILDLIFE DEPARTMENT'S
LETTER TO MR. MOHAMMED ALLY AND REBUTTAL TO THE
DIRECT TESTIMONY OF TPWD WITNESS RUSSELL HOOTON**

1 Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

2 A. This section of my testimony responds to recommendations and comments contained
3 in (1) the September 13, 2013 letter from the Texas Parks and Wildlife Department
4 (TPWD), in accordance with the Order of Referral in this case and Tex. Parks &
5 Wild. Code § 12.0011, and (2) the direct testimony of TPWD witness Russell Hooten,
6 who works for the TPWD, filed on November 8, 2013. The recommendations and
7 comments in the TPWD letter and Mr. Hooten's testimony are quite similar and will
8 be addressed together below. I also offer proposed language for the final order that is
9 similar to findings that were included in recent CCN cases for 345 kV transmission
10 lines.

11 Q. PAGE 2 OF THE TPWD'S LETTER RECOMMENDS THAT THE COMMISSION
12 REVIEW AND CONSIDER PREVIOUS TPWD CORRESPONDENCE AND THE
13 RECOMMENDATIONS THEY CONTAIN. WHAT IS YOUR RESPONSE?

14 A. The previous correspondence consists of two TPWD letters to POWER. The first is a
15 May 31, 2012 letter that is included in Appendix A of the EA. The second is a
16 May 9, 2013 letter that is attached to TWPD's September 13, 2013 letter filed in this
17 proceeding. Mr. Hooten accurately explains on page 7 of his testimony that the first
18 letter focused on the preliminary study area, and the second letter addressed
19 alternative links that cross the IBWC Lower Rio Grande Valley Flood Control Project
20 ROW.

1 Q. PLEASE SUMMARIZE THE COMMENTS AND RECOMMENDATIONS IN
2 THOSE TWO PREVIOUS LETTERS.

3 A. The recommendations generally address measures to protect birds (such as scheduling
4 vegetation clearing, informing contractors about migratory birds, identifying existing
5 utility corridors or disturbed areas, and using avian safety features); measures to
6 protect wildlife and federally-listed plant species and species of concern (such as
7 locating the facilities adjacent to previously disturbed areas such as utility or
8 transportation ROW); and water quality (such as using existing bridges to transport
9 heavy equipment, using best practices to prevent erosion or sedimentation into
10 channels). Many of the recommendations are similar to or address the same general
11 subjects as what Mr. Hooten and the TPWD's September 13, 2013 letter filed in this
12 docket address.

13 Q. WHAT IS YOUR RESPONSE TO THESE RECOMMENDATIONS IN TPWD'S
14 PREVIOUS LETTERS TO POWER?

15 A. Joint Applicants follow many of the TPWD's recommendations in the previous
16 correspondence relating to use of existing right-of-way (ROW), re-vegetation of
17 disturbed areas, avoiding impacts to water resources, erosion controls, and avoiding
18 potential impacts to endangered species.

1 Q. DOES THE REMAINDER OF THIS SECTION OF YOUR TESTIMONY
2 ADDRESS ONLY THE OTHER RECOMMENDATIONS IN THE TPWD'S
3 SEPTEMBER 13, 2013 LETTER AND MR. HOOTEN'S TESTIMONY?

4 A. Yes, although in a few instances I mention below where a recommendation in the
5 September 13, 2013 letter or testimony is similar to one made in the earlier letters.

6 Q. WHAT IS THE TPWD'S NEXT RECOMMENDATION?

7 A. On page 5 of its September 13, 2013 letter and pages 8-9 of Mr. Hooten's testimony,
8 TPWD states that Route 32 would locate the transmission line between several tracts
9 of high quality habitat. TPWD recommends that the PUC select a route such as
10 Route 29 or Route 9S that would avoid or minimize adverse impacts to wildlife
11 habitat.

12 Q. WHAT IS YOUR RESPONSE?

13 A. To the extent reasonable, line links for this project were delineated to avoid habitable
14 structures and lands owned by state and federal agencies. This routing methodology
15 resulted in the placement of alternative line links on undeveloped land between
16 several tracts of land owned by TPWD, rather than through TPWD tracts or on
17 previously developed property. I believe this is an appropriate location for these
18 alternative links.

19 Q. WHAT IS THE NEXT TPWD RECOMMENDATION?

20 A. Page 7 of TPWD's letter and page 17 of Mr. Hooten's testimony recommend that the
21 issue of direct, indirect, and cumulative impacts associated with direct habitat loss
22 and habitat fragmentation and impacts to bird use be examined further to determine

1 the quantifiable impacts to wildlife habitat by a project of this scale. If the proposed
2 impacts are found to be adverse and/or irreversible, TPWD asserts that these
3 consequences should be considered in the decision making process.

4 Q. WHAT IS YOUR RESPONSE?

5 A. This recommendation is similar to the recommendation on page 12 of the TWPD's
6 May 31, 2012 letter discussed above. Further examining the entire project area is
7 not reasonable or feasible for a number of reasons and it certainly would not allow
8 Joint Applicants to meet the in-service date for this ERCOT critical project. The
9 more practical approach would be to employ reasonable surveying and mitigation
10 measures after a route is selected by the PUC and prior to construction.

11 Q. PAGE 7 OF THE TPWD LETTER AND PAGE 17 OF MR. HOOTON'S
12 TESTIMONY ALSO STATE THAT THEY ARE "UNABLE TO CONCLUDE
13 THAT THE PROPOSED PROJECT WOULD NOT HAVE AN IRREVERSIBLE,
14 ADVERSE IMPACT ON THE EXISTING ECOLOGICAL CONDITION OF THE
15 PROJECT AREA." HOW DO YOU RESPOND?

16 A. The study area for this project is approximately 1,004 square miles or 642,560 acres.
17 Due to the small footprint of this project within this large study area, I do not believe
18 the proposed project would have an irreversible, adverse impact on the existing
19 ecological condition of the study area. Additionally, I do not believe construction of
20 the line would result in an irreversible ecological condition.

21 Q. PAGE 8 OF TPWD'S LETTER AND PAGES 19-20 OF MR. HOOTEN'S
22 TESTIMONY RECOMMEND THAT TEXAS NATURAL DIVERSITY

1 DATABASE (TXNDD) RECORDS NOT BE EITHER THE SOLE SOURCE OF
2 RARE SPECIES DATA USED IN DETERMINING WHETHER A SPECIES
3 OCCURS ALONG A PROPOSED ROUTE OR THE SOLE BASIS FOR A ROUTE
4 SELECTION. WHAT IS YOUR RESPONSE TO THIS RECOMMENDATION?

5 A. As the Commission has recognized, utilities do not gain access to private property
6 until after a route is approved by the Commission. As a result, the EA considered
7 known/occupied areas of endangered or threatened species habitat based on
8 information in the TXNDD database and other available information. Once a route is
9 approved by the Commission and ETT or Sharyland obtains access to the property
10 along that route, it can undertake on-the-ground measures to identify whether there is
11 potential endangered or threatened species habitat and respond appropriately if such
12 habitat is identified.

13 Q. PAGE 8 OF TPWD'S LETTER AND PAGE 4 OF MR. HOOTEN'S TESTIMONY
14 ASSERT THAT THE EA DID NOT PROVIDE SUFFICIENT INFORMATION TO
15 DETERMINE WHICH ROUTE WOULD BEST MINIMIZE IMPACTS ON
16 IMPORTANT, RARE, AND PROTECTED SPECIES. WHAT IS YOUR
17 RESPONSE?

18 A. As TPWD is well aware and admits, there is a lack of access to private land and,
19 admittedly, the reason their *own* TXNDD records are so sparsely populated. Joint
20 Applicants and POWER did not have access to private properties and did include the
21 results of its TXNDD records research during their alternative route delineation and
22 evaluation process. I do not believe it would be prudent or practical in terms of time

1 and costs to survey all of the routes for all of the species TPWD believes are
2 important, rare and protected. The more reasonable course of action, as supported by
3 the Commission in prior dockets, is to consult with the appropriate agencies after a
4 single route is selected and the utility has access to the land. On-the-ground surveys
5 are the only way to accurately document the presence or absence of certain species.

6 Q. PAGES 9-10 OF TPWD'S LETTER AND PAGES 21-22 OF MR. HOOTEN'S
7 TESTIMONY RECOMMEND SELECTING ROUTES THAT AVOID USING
8 LINKS IMPACTING KNOWN POPULATIONS OF FEDERALLY-LISTED
9 PLANTS AND SURVEYING ANY ROUTE THAT IS SELECTED TO BE
10 CONSTRUCTED PRIOR TO CONSTRUCTION FOLLOWING PROTOCOLS
11 ESTABLISHED BY THE U.S. FISH AND WILDLIFE SERVICES (USFWS).
12 WHAT IS YOUR RESPONSE TO THESE RECOMMENDATIONS?

13 A. As discussed in the EA, potential impacts to federally listed plants have been
14 considered in evaluating transmission line routes in this proceeding, although route
15 surveys were not feasible due to a lack of access to private land and state laws
16 governing the dissemination of biological information from private lands. Although
17 federally-listed plant species are not protected on private property, after route
18 selection, Joint Applicants will consult with USFWS, if necessary, concerning any
19 existing endangered plant habitat which will be affected by the selected route and any
20 potential harm that may result to federally listed plants.

1 Q. PLEASE CONTINUE WITH TPWD'S NEXT RECOMMENDATION.

2 A. Page 10 of TPWD's letter and page 22 of Mr. Hooten's testimony state that locating a
3 transmission line across potential Northern Aplomado Falcon hunting and nesting
4 habitat could increase collision risks for this federally-listed species. TPWD
5 recommends selecting routes that would avoid creating new fragments through
6 coastal prairie habitat in order to preserve Northern Aplomado Falcon habitat and
7 avoid additional impacts to this species.

8 Q. WHAT IS YOUR RESPONSE?

9 A. This same concern is raised on page 6 of the TWPD's May 31, 2012 letter to POWER
10 that I mentioned above. A number of alternative routes follow existing transmission
11 lines through this area. Falcons have very keen eyesight and are very mobile. In my
12 opinion, they are not very susceptible to collisions with wires.

13 Q. PAGE 10 OF TPWD'S LETTER AND PAGE 22 OF MR. HOOTEN'S DIRECT
14 TESTIMONY STATE THAT FEDERALLY-LISTED FELIDS REQUIRE DENSE
15 TRACTS AND CORRIDORS OF BRUSH. THEY RECOMMEND SELECTING
16 ROUTES THAT WOULD AVOID CREATING NEW FRAGMENTS THROUGH
17 WOODLAND/BRUSHLAND HABITAT, SPANNING ARROYOS, STREAMS,
18 DRAINAGE DITCHES AND IRRIGATION CANALS, AND LOCATING
19 SUPPORT STRUCTURES OUTSIDE OF RIPARIAN AREAS TO PRESERVE
20 POTENTIAL TRAVEL CORRIDORS. WHAT IS YOUR RESPONSE TO THIS
21 STATEMENT?

1 A. As discussed in the EA, potential impacts to federally listed animals have been
2 considered in evaluating transmission line routes in this proceeding, although pre-
3 PUC route approval surveys were not feasible, as discussed above. After route
4 selection, Joint Applicants will also consult with USFWS, if necessary, concerning
5 any existing habitat which will be affected by the selected route and any potential
6 harm that may result to federally listed animals, including the jaguarundi.
7 Occurrences of the species have been recorded within the study area, however, the
8 last confirmed sighting of the jaguarundi in Texas was two miles east of Brownsville
9 in 1986.

10 Q. WHAT IS TPWD'S NEXT RECOMMENDATION?

11 A. Page 11 of TPWD's letter and page 24 of Mr. Hooten's testimony recommend that
12 any transmission lines that cross or are located near streams and associated riparian
13 corridors should have line markers (e.g., Bird-Flight Diverter spiral devices) installed
14 at the crossing or closest point to the waterbodies to reduce potential collisions by
15 birds flying along or near the waterbodies. Also, any transmission lines that are
16 located between tracts of managed land, which are typically high bird use areas,
17 should have line markers installed. In particular, the shield wire (i.e., overhead
18 ground wire) should be marked with line markers to increase its visibility.

19 Q. WHAT IS YOUR RESPONSE?

20 A. The TPWD's May 31, 2012 letter to POWER makes the same recommendation on
21 page 7. Following the approval of a specific route, Joint Applicants will determine if

1 any high bird use areas occur along the route and will consult with the U. S. Fish and
2 Wildlife Service concerning the locations for any necessary line markers.

3 Q. WHAT IS THE RECOMMENDATION ON PAGE 13 OF TPWD'S LETTER?

4 A. Page 13 of TPWD's letter and page 27 of Mr. Hooten's testimony recommend
5 surveying for state-listed reptile species at the appropriate time of year along any
6 selected route and that a biological monitor be on site at appropriate times (e.g.,
7 during vegetation clearing) to assure impacts to listed or rare species are avoided.
8 They also recommend employing a biologist permitted by TPWD to handle species
9 and relocate them out of the construction area. Finally, they recommend that Joint
10 Applicants follow the "Texas tortoise best management practices" to reduce the
11 impacts of construction and maintenance on reptiles and amphibians, both non-listed
12 and state-listed.

13 Q. WHAT IS YOUR RESPONSE TO THIS RECOMMENDATION?

14 A. Upon route selection, if necessary Joint Applicants will consult with the appropriate
15 agencies concerning protected species along the selected route. If the Commission
16 requires Joint Applicants to have a biological monitor on hand during clearing and
17 construction activities to protect state-listed reptile species, Joint Applicants will
18 comply with this requirement. However, the Commission has rejected the
19 requirement with respect to specific species in prior transmission CCN orders. If
20 Joint Applicants are not required to have a biological monitor present during
21 construction, they will nonetheless make reasonable efforts to allow threatened

1 species to vacate affected areas or be relocated to a suitable nearby area by a
2 permitted individual.

3 Q. PAGE 13 OF TPWD'S LETTER AND PAGE 29 OF MR. HOOTEN'S
4 TESTIMONY RECOMMEND SELECTING ROUTES THAT WOULD AVOID
5 LINKS IN WHICH KNOWN POPULATIONS OF RARE PLANTS OCCUR AND
6 THAT ANY ROUTE SELECTED TO BE CONSTRUCTED SHOULD BE
7 SURVEYED BY A QUALIFIED BOTANIST FAMILIAR WITH RARE PLANTS
8 OF SOUTH TEXAS PRIOR TO CONSTRUCTION. WHAT IS YOUR
9 RESPONSE?

10 A. Potential impacts to rare plants have been considered in evaluating transmission line
11 routes in this proceeding. Joint Applicants do not believe it is in the best interest of
12 the electric rate payers of Texas or in the interest of getting this critical line
13 constructed, to conduct expensive, time consuming surveys for non-protected species.

14 Q. PAGE 15 OF TPWD'S LETTER AND PAGE 30 OF MR. HOOTEN'S
15 TESTIMONY RECOMMEND THAT CONSTRUCTION PERSONNEL BE
16 FAMILIARIZED WITH THE SPECIES THAT COULD POTENTIALLY BE
17 ENCOUNTERED IN THE PROJECT AREA. IF ENCOUNTERED, WILDLIFE,
18 INCLUDING STATE-LISTED SPECIES, SHOULD BE AVOIDED AND
19 PERMITTED TO LEAVE A PROJECT AREA ON ITS OWN. WHAT IS YOUR
20 RESPONSE TO THIS RECOMMENDATION?

1 A. Joint Applicants will comply with these recommendations to the extent possible,
2 consistent with the need to complete this project in a timely and cost-effective
3 manner.

4 Q. PAGE 15 OF TPWD'S LETTER AND PAGES 30-31 OF MR. HOOTEN'S
5 TESTIMONY RECOMMEND THAT, WITH LANDOWNER APPROVAL, RARE
6 SPECIES OCCURRENCE INFORMATION BE COLLECTED DURING
7 SURVEYS AND ANY SUBSEQUENT OBSERVATIONS BE SUBMITTED TO
8 THE TXNDD. WHAT IS YOUR RESPONSE TO THIS RECOMMENDATION?

9 A. To the extent landowners allow rare species information to be released, with their
10 permission, information pertaining to any rare species discovered will be submitted to
11 TXNDD.

12 Q. PLEASE CONTINUE WITH TPWD'S NEXT RECOMMENDATION.

13 A. Page 16 of TPWD's letter and page 32 of Mr. Hooten's testimony recommend
14 selecting routes that would avoid potential direct or indirect impacts to wildlife and
15 habitat that are managed on state-owned property and utilize previously disturbed
16 areas (e.g., croplands) to the greatest extent practicable. TPWD recommends the PUC
17 select a route such as Route 9S or Route 29 that would avoid impacting state-owned
18 land.

19 Q. WHAT IS YOUR RESPONSE?

20 A. The Joint Applicants have filed alternative routes in this docket that potentially
21 impact certain features to varying extents. Selecting a route that minimizes impacts to
22 features important to TPWD, such as Route 29, would result in 1,153 habitable

1 structures being located within 500 feet of the centerline of that route and five
2 habitable structures would potentially need to be relocated or removed. Route 9S
3 would result in 1,074 habitable structures being located within 500 feet of the
4 centerline of that route and five habitable structures would potentially need to be
5 relocated or removed.

6 Q. WHAT IS THE NEXT RECOMMENDATION?

7 A. Page 14 of TPWD's letter and pages 33 of Mr. Hooten's testimony recommend that,
8 in order to minimize the impacts of clearing brush from the ROW, with landowner
9 consent, cleared trees be used to construct brush piles along the edge of the ROW.
10 They also recommend, in addition to herbaceous species, allowing sparse clumps of
11 low-growing shrubs to encroach in the ROW at intermittent intervals to provide cover
12 for wildlife.

13 Q. WHAT IS YOUR RESPONSE TO THIS RECOMMENDATION?

14 A. Joint Applicants will comply with these recommendations to the extent possible,
15 consistent with the need to complete this project in a timely and cost-effective
16 manner.

17 Q. PAGE 17 OF TPWD'S LETTER AND PAGES 34-35 OF MR. HOOTEN'S
18 TESTIMONY RECOMMEND THAT, IN ADDITION TO ALLOWING LOW-
19 GROWING NATIVE SHRUBS AND GRASSES TO REMAIN IN THE ROW, A
20 POST-CONSTRUCTION REVEGETATION PLAN BE DEVELOPED AND
21 IMPLEMENTED THROUGHOUT THE LENGTH OF THE SELECTED ROUTE,

1 EXCLUDING ACTIVE AGRICULTURAL LANDS. WHAT IS YOUR
2 RESPONSE TO THIS RECOMMENDATION?

3 A. I note that page 10 of the TPWD's May 31, 2012 letter to POWER contains
4 recommendations for revegetation, including the use of native grasses and forbs.

5 Re-vegetating the ROW is addressed in several different ways. The ROW may
6 re-seed naturally, depending on climatic conditions, time of year, and local species
7 present. At times, Joint Applicants will work with landowners to plant their preferred
8 mix or pay them to plant the ROW, where crops or hay pastures are involved. Finally,
9 Joint Applicants may use seed mixes recommended by TXDOT near highways or
10 mixes such as that recommended by the National Wild Turkey Association. Joint
11 Applicants' goal is to meet the landowners' reseeding or crop revegetation needs for
12 their property.

13 Q. PAGES 17-18 OF THE TWPD'S LETTER AND PAGES 35-36 OF MR.
14 HOOTEN'S TESTIMONY OFFER RECOMMENDATIONS ON
15 COMPENSATORY "MITIGATION" FOR THOSE HABITATS WHERE
16 IMPACTS FROM THE PROJECT CANNOT BE AVOIDED OR MINIMIZED.
17 HOW DO YOU THINK THE COMMISSION SHOULD ADDRESS THESE
18 RECOMMENDATIONS?

19 A. Joint Applicants will not own any land within the ROWs required for this project.
20 The land beneath the line will remain in private ownership. I understand this
21 particular recommendation is a request by TPWD and is not required by any law,
22 statute, or regulation, and to my knowledge has never been required by the

1 Commission or provided by a utility for construction of a transmission line authorized
2 by a CCN in Texas. In my opinion this would be a costly undertaking, equivalent to
3 an unfunded mandate, for Joint Applicants and the electric ratepayers of ERCOT.

4 Q. DO YOU HAVE ANY CONCLUDING COMMENTS ON TPWD'S
5 RECOMMENDATIONS AND COMMENTS?

6 A. Yes, I do. I offer proposed language for the final order that addresses TPWD's
7 recommendations. This language is similar to findings in the final orders in 345 kV
8 transmission line CCN dockets.

9 Q. WHAT LANGUAGE DO YOU PROPOSE FOR THIS CASE?

10 A. I propose the following language be included in the Final Order for this case:

11 Joint Applicants shall follow the procedures outlined in the following
12 publications for protecting raptors: *Suggested Practices for Avian Protection on*
13 *Power Lines: The State of the Art in 2006*, Avian Power Line Interaction Committee
14 (APLIC), 2006 and the *Avian Protection Plan Guidelines* published by APLIC in
15 April, 2005. Joint Applicants shall take precautions to avoid disturbing occupied
16 nests and will take steps to minimize the impact of construction on migratory birds
17 during the nesting season of the migratory bird species identified in the area of
18 construction.

19 Joint Applicants shall exercise extreme care to avoid affecting non-targeted
20 vegetation or animal life when using chemical herbicides to control vegetation within
21 the right-of-way, and shall ensure that such herbicide use complies with the rules and

1 guidelines established in the Federal Insecticide, Fungicide and Rodenticide Act and
2 with the Texas Department of Agriculture regulations.

3 Joint Applicants shall minimize the amount of flora and fauna disturbed
4 during construction of the transmission line, except to the extent necessary to
5 establish appropriate right-of-way clearance for the transmission line. In addition,
6 Joint Applicants shall re-vegetate using native species considering landowner
7 preferences and wildlife needs in doing so. Furthermore, to the maximum extent
8 practicable, Joint Applicants shall avoid adverse environmental impacts to sensitive
9 plant and animal species and their habitats as identified by TPWD and the USFWS.

10 Joint Applicants shall implement erosion control measures as appropriate.
11 Said erosion control measures may include inspection of the right-of-way before and
12 during construction to identify erosion areas and implement special precautions as
13 determined reasonable to minimize the impact of vehicular traffic over the areas.
14 Joint Applicants will also exercise care when clearing near waterways and will take
15 reasonable steps to minimize adverse impacts on vegetation. Joint Applicants shall
16 return each affected landowner's property to its original contours and grades unless
17 otherwise agreed to by the landowner or landowner's representative. Joint Applicants
18 shall not be required to restore original contours and grades where different contour
19 or grade is necessary to ensure the safety or stability of the project's structures or the
20 safe operation and maintenance of the line.

21 Joint Applicants shall use best management practices to minimize the
22 potential impact to migratory birds and threatened or endangered species.

XIII. CONCLUSION

1 Q. AFTER HAVING REVIEWED THE INTERVENORS' TESTIMONY IN THIS
2 DOCKET, WHAT IS YOUR CONCLUSION?

3 A. I have found nothing in any of the intervenors' testimony that would preclude
4 construction of this proposed transmission line along any of the 32 original alternative
5 routes filed or the 10 supplemental routes that resulted from the Route Adequacy
6 Hearing, including Route 3S Modified.

7 Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

8 A. Yes, it does.

Table 4-1S MODIFIED - ENVIRONMENTAL DATA FOR ROUTE EVALUATION

Evaluation Criteria	Route 1S	Route 2S	Route 3S	Route 3S Modified	Route 4S	Route 5S	Route 6S	Route 7S	Route 8S	Route 9S	Route 10S
Land Use											
Length of alternative route	86.3	92.6	96.0	95.8	87.2	101.6	86.6	97.7	88.3	86.3	88.5
Number of habitable structures ¹ within 500 feet of ROW centerline	713	941	881	961	1326	1162	1101	1334	1170	1074	869
Number of newly affected habitable structures within 500 feet of ROW centerline	627	772	784	782	1031	992	981	1069	1047	945	793
Number of habitable structures ² potentially to be relocated/renewed ³	5	6	6	6	1	0	0	1	5	5	5
Length of ROW using existing transmission line ROW	0	0	0	0	0	0	0	0.65	0	0	0
Length of ROW parallel to existing transmission line ROW	16.3	25.1	26.6	26.6	31.1	24.9	17.5	23.1	8.8	17.9	18.2
Length of ROW parallel to other existing ROW (highways, pipelines, railways, canals, etc.)	39.0	33.6	35.7	35.2	17.0	36.6	38.6	35.4	41.5	37.8	37.8
Length of ROW parallel to apparent property lines ⁴	12.5	15.2	14.7	15.5	18.3	19.6	14.2	18.0	15.7	9.7	13.4
Length of ROW through parks/recreational areas ⁵	0.3	0	0	0	0	0	0	0	0	0	0
Number of parks/recreational areas ⁶ crossed by ROW centerline	1	0	0	0	0	0	0	0	0	0	0
Number of additional parks/recreational areas ⁷ within 1,000 feet of ROW centerline	1.6	0	0	0	0	0	0	0.4	0	0	0
Length of ROW through USFWS National Wildlife Refuges	5.2	2.3	3.3	3.3	4.1	2.9	0.9	0.9	5.9	1.0	1.0
Length of ROW through BWC managed ROW	52.1	56.4	59.1	58.6	51.8	63.7	53.8	57.4	51.0	51.5	53.1
Length of ROW through orchards ⁸	3.9	4.2	4.1	4.1	2.9	5.2	3.0	4.6	3.3	3.0	4.3
Length of ROW through pastures/rangeland	17.6	20.6	21.0	21.8	20.2	19.6	20.4	21.7	23.9	21.4	20.5
Length of ROW through feed (rolling or pivot type)	0	0	0	0	0	0	0	0	0	0	0
Number of pipeline crossings	50	29	32	32	58	62	43	60	32	45	50
Number of farm-to-market road crossings	19	16	18	18	22	23	27	29	18	26	24
Number of US and State highway crossings	14	15	15	11	12	18	15	16	11	13	17
Number of farm-to-market road crossings	15	12	11	11	16	17	11	19	15	15	11
Number of cemeteries within 1,000 feet of the ROW centerline	2	3	3	3	2	3	5	5	2	2	5
Number of FAA registered airports with at least one runway more than 3,200 feet in length located within 20,000 feet of ROW centerline	2	2	2	2	2	2	2	2	2	2	2
Number of FAA registered airports having no runway more than 3,200 feet in length located within 10,000 feet of ROW centerline	0	2	2	2	4	3	1	3	0	0	0
Number of private airports within 10,000 feet of the ROW centerline	1	1	1	1	1	1	1	1	1	1	1
Number of heliports within 5,000 feet of the ROW centerline	0	0	0	0	2	2	2	0	2	0	0
Number of commercial AM radio transmitters within 10,000 feet of the ROW centerline	9	9	8	9	9	14	9	14	12	14	9
Number of FM radio transmitters, microwave towers, and other electronic installations within 2,000 feet of ROW centerline	9	11	10	11	11	11	13	15	12	10	13
Aesthetics											
Estimated length of ROW within foreground visual zone ⁹ of US and State highways	12.1	14.5	13.0	13.0	9.7	18.2	23.8	29.2	10.5	18.7	21.8
Estimated length of ROW within foreground visual zone ⁹ of farm-to-market roads	29.5	28.6	29.3	30.2	31.8	36.3	27.9	49.4	29.5	31.2	25.4
Estimated length of ROW within foreground visual zone ⁹ of parks/recreational areas	11.7	7.5	8.5	8.5	7.8	3.7	7.6	6.4	10.1	7.1	5.9
Ecology											
Length of ROW through upland woodlands	2.5	0.5	0.5	0.5	1.2	1.6	1.6	2.9	1.1	1.8	1.4
Length of ROW through bottomland/riparian woodlands	1.4	1.5	1.6	1.6	3.0	1.8	1.3	1.5	1.3	0.8	0.8
Length of ROW across mapped NWR wetlands	0.9	2.8	2.2	2.2	1.8	2.3	2.3	0.1	2.3	0.2	2.7
Length of ROW across known habitat of federally listed endangered or threatened species	3.1	10.2	11.8	11.8	18.3	15.0	11.4	16.0	10.8	10.2	11.4
Length of ROW across open water (lakes, ponds)	0.4	0.7	0.7	0.7	0.7	0.9	0.6	0.4	0.7	0.6	0.6
Number of stream crossings	6	3	5	5	8	13	3	5	5	4	3
Number of river crossings	0	0	0	0	0	0	0	0	0	0	0
Number of riparian/canal crossings	114	141	144	144	125	144	112	129	113	121	126
Length of ROW parallel (within 100 feet) to streams or rivers	0	0	0	0	0	0	0	0	0	0	0
Length of ROW across 100-year floodplains	21.4	18.5	19.1	18.6	26.5	26.8	20.5	27.1	19.7	12.8	17.0
Length of ROW within Coastal Management Program boundary	7.0	15.9	15.9	15.9	14.1	13.6	8.9	7.0	13.6	7.0	8.9
Length of ROW seaward of the Coastal Facilities Designation Line	7.0	15.9	15.9	15.9	14.1	13.6	8.9	7.0	13.6	7.0	8.9
Cultural Resources											
Number of recorded cultural resource sites crossed by ROW	1	2	2	2	1	1	2	4	1	2	1
Number of additional recorded cultural resource sites within 1,000 feet of ROW centerline	5	2	3	3	2	3	3	4	3	3	3
Number of National Register listed sites crossed by ROW centerline	1	0	0	0	1	1	1	1	1	1	0
Number of additional National Register listed sites within 1,000 feet of ROW centerline	0	0	0	0	0	0	0	1	1	0	1
Length of ROW across areas of high archaeological site potential	37.7	36.8	39.7	39.5	61.5	65.9	58.0	67.9	47.5	40.4	36.1

¹Single-family and multi-family dwellings, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, and schools, or other structures commonly inhabited by humans or intended to be inhabited by humans on a daily or regular basis within 500 feet of the centerline of a transmission project of 230 kV or more.

²ERT and Sharyland well potentially recoverable/renewable habitable structures within 750 feet of the centerline.

³Apparent property lines created by existing roads, highways, or railroad ROWs are not "double-counted" in the length of ROW parallel to property lines criteria.

⁴Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church within 1,000 feet of the centerline of the project. This includes the Chinua Woods Preserves.

⁵Orchards does not include orchards.

⁶One-half mile, unobstructed.

Note: All length measurements are shown in miles unless noted otherwise.