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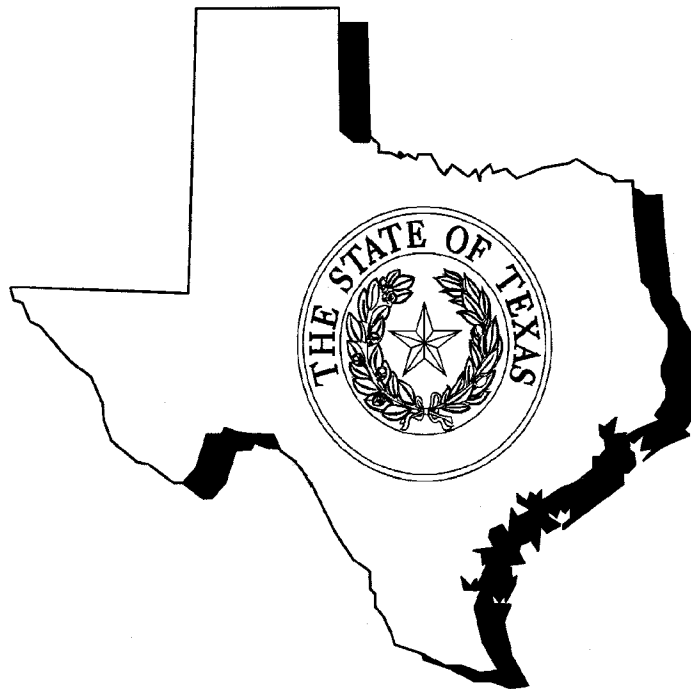
**JOINT APPLICATION OF AEP
TEXAS INC. AND SHARYLAND
UTILITIES LLC TO AMEND
CERTIFICATES OF
CONVEINCE AND NECESSITY
FOR THE LA PALMA-TO-
KINGFISHER DOUBLE-CIRCUIT
345-KV TRANSMISSION LINE IN
CAMERON COUNTY**

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BEFORE THE STATE OFFICE

OF

ADMINISTRATIVE HEARINGS



**DIRECT TESTIMONY OF
SHERRYHAN GHANEM
INFRASTRUCTURE DIVISION
PUBLIC UTILITY COMMISSION OF TEXAS**

August 26, 2022

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ATTACHMENTS

SG-1	Qualifications of Sherryhan Ghanem
SG-2	List of Dockets Containing Testimony of Sherryhan Ghanem
SG-3	PURA §§ 35.005(b) and 39.203(e)

1 **I. QUALIFICATIONS**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is Sherryhan Ghanem. I am employed by the Public Utility Commission of Texas
4 (“PUC” or “Commission”) as an Engineering Specialist in the Engineering Section of the
5 Infrastructure Division. My business address is 1701 North Congress Avenue, Austin,
6 Texas 78701.

7 **Q. Please outline your educational and professional background.**

8 A. I have a Bachelor of Science degree in Electrical Engineering. My career to date has
9 included technical work in the energy industry. I have been employed at the PUC since
10 November of 2021. Attachment SG-1 of my testimony contains a more detailed
11 description of my educational and professional background.

12 **Q. Are you a registered professional engineer?**

13 A. No.

14 **Q. Have you filed testimony at the Commission in previous proceedings?**

15 A. Yes. A list of dockets in which I have filed testimony is provided in Appendix SG-2.

16 **II. SCOPE OF TESTIMONY**

17 **Q. What is the purpose of your testimony in this docket?**

18 A. The purpose of my testimony is to present Commission Staff’s recommendations
19 concerning the joint application (Application) of AEP Texas Inc. (AEP) and Sharyland
20 Utilities LLC (Sharyland) (collectively, Joint Applicants) to amend certificates of

1 convenience and necessity (CCN) to construct a new 345 kilovolt (kV) double circuit
2 capable transmission line, with one circuit installed initially, in Cameron County, Texas
3 (proposed project)¹. The transmission line will begin at the existing AEP Texas La Palma
4 345-kV station which is located in the City of San Benito and approximately 0.80 mile
5 south of US Highway Business 77 and approximately 0.30 mile southeast of Farm-to-
6 Market Road (FM) 1846 and extend southeast to the proposed Sharyland Kingfisher 345-
7 kV Station, to be located on the west side of County Road 315 (Casey Road) approximately
8 0.80 mile south of FM 510 and approximately 0.73 mile southeast of FM 510. The line will
9 be approximately 4.35 to 20.91 miles depending on which route is selected.²

10 **Q. What is the scope of your testimony?**

11 A. The scope of my testimony is to provide Commission Staff's recommendation regarding
12 selection of routes from among the alternative routes presented by the Joint Applicants.

13 **Q. What are the statutory requirements that a utility must meet to amend its CCN to**
14 **construct a new transmission line?**

15 A. Section 37.056(a) of the Public Utility Regulatory Act³ (PURA) states that the Commission
16 may approve an application for a CCN only if the Commission finds that the CCN is
17 necessary for the service, accommodation, convenience, or safety of the public. Further,
18 PURA provides that the Commission shall approve, deny, or modify a request for a CCN

¹ Joint Application of AEP Texas Inc. and Sharyland Utilities LLC to Amend Certificates of Convenience and Necessity for the La Palma-to-Kingfisher Double-Circuit 345-kV Transmission Line in Cameron County at 5 (Application) (June 30, 2022).

² Application at 5.

³ Public Utility Regulatory Act, Tex. Util. Code §§ 11.001-66.016 (PURA).

1 after considering the factors specified in PURA § 37.056(c) that are applicable according
2 to 39.203(e), which are as follows:

- 3 (1) The adequacy of existing service;
- 4 (2) The need for additional service;
- 5 (3) The effect of granting the certificate on the recipient of the certificate and
6 any electric utility serving the proximate area; and
- 7 (4) Other factors, such as:
 - 8 (A) Community values;
 - 9 (B) Recreational and park areas;
 - 10 (C) Historical and aesthetic values;
 - 11 (D) Environmental integrity;
 - 12 (E) The probable improvement of service or lowering of cost to
13 consumers in the area if the certificate is granted, and
 - 14 (F) To the extent applicable, the effect of granting the certificate on the
15 ability of this state to meet the goal established by PURA
16 § 39.904(a).

17 **Q. Do the Commission's rules provide any instruction regarding routing criteria?**

18 A. Yes. 16 Texas Administrative Code (TAC) 25.101(b)(3)(B) requires that an application for
19 a new transmission line address the criteria in PURA 37.056(c), and that upon considering
20 those criteria, engineering constraints and costs, the line shall be routed to the extent
21 reasonable to moderate the impact on the affected community and landowners, unless grid

reliability and security dictate otherwise. The following factors shall be considered in the selection of Joint Applicants' alternative routes:

(i) Whether the routes parallel or utilize existing compatible rights-of way for electric facilities, including the use of vacant positions on existing multiple-circuit transmission lines;

(ii) Whether the routes parallel or utilize existing compatible rights-of way, including roads, highways, railroads, or telephone utility rights-of-way;

(iii) Whether the routes parallel property lines or other natural or cultural features; and

(iv) Whether the routes conform with the policy of prudent avoidance.

Q. What issues identified by the Commission must be addressed in this docket?

A. In the Order of Referral and Preliminary Order filed on July 11, 2022, the Commission identified the following issues that must be addressed:

1. Is the applicants' application to amend their respective CCNs adequate? Does the application contain an adequate number of reasonably differentiated alternative routes to conduct a proper evaluation? In answering this question, consideration must be given to the number of proposed alternatives, the locations of the proposed transmission line, and any associated proposed transmission facilities that influence the location of the line. Consideration may also be given to the facts and circumstances specific to the geographic area under consideration and to any analysis and reasoned justification presented for a limited number of alternative routes. A limited number of alternative routes is not in itself a sufficient basis for finding an application inadequate when the

1 facts and circumstances or a reasoned justification demonstrates a reasonable basis for
2 presenting a limited number of alternatives. If an adequate number of routes is not
3 presented in the application, the ALJ must allow the applicants to amend the application
4 and to provide proper notice to affected landowners; however, if the applicants choose
5 not to amend the application, then the ALJ may dismiss the case without prejudice.

6 2. Did the applicants provide notice of the application in accordance with 16 TAC
7 § 22.52(a)(1), (2), and (3)?

8 3. Did the applicants provide notice of the public meeting in accordance with 16 TAC
9 § 22.52(a)(4)?

10 4. What were the principal concerns expressed in the questionnaire responses received at
11 or after any public meetings held by the applicants regarding the proposed transmission
12 facilities?

13 5. Weighing the factors set forth in PURA § 37.056(c) and 16 TAC § 25.101(b)(3)(B), to
14 the extent they are applicable under PURA § 39.203(e), which proposed transmission-
15 line route is the best alternative?

16 6. Are there alternative routes or configurations of facilities that would have a less
17 negative effect on landowners? What would be the incremental cost of those routes or
18 configurations of facilities?

19 7. If alternative routes or configurations of facilities are considered because of individual
20 landowners' preferences, please address the following issues:

21 a. Have the affected landowners made adequate contributions to offset any
22 additional costs associated with the accommodations?

b. Have the accommodations to landowners diminished the electric efficiency of the line or reliability?

8. Did the Texas Parks and Wildlife Department provide any recommendations or informational comments regarding this application in accordance with section 12.0011(b) of the Texas Parks and Wildlife Code? If so, please address the following issues:

a. What modifications, if any, should be made to the proposed transmission facilities as a result of any recommendations or comments?

b. What conditions or limitations, if any, should be included in the final order in this docket as a result of any recommendations or comments?

c. What other disposition, if any, should be made of any recommendations or comments?

d. If any recommendation or comment should not be incorporated in the proposed transmission facilities or the final order, should not be acted on, or is otherwise inappropriate or incorrect in light of the specific facts and circumstances presented by this application or the law applicable to contested cases, please explain why that is the case.

9. What permits, licenses, plans, or permission will be required for construction and operation of the proposed transmission facilities? If any alternative route requires permission or an easement from a state or federal agency, please address in detail the following:

a. What agency is involved, and what prior communication have the applicants had with the agency regarding the proposed transmission facilities?

b. Has the agency granted the required permission or easement? If not, when is a decision by the agency expected?

c. What contingencies are in place if the agency does not grant the required permission or easement or if the process to obtain the required permission or easement would materially affect the estimated cost, proposed design plans, or anticipated timeline to construct the proposed transmission facilities?

10. Is any part of the proposed transmission facilities located within the coastal management program boundary as defined in 31 TAC § 503.1(a)? If so, please address the following issues:

a. Do the facilities comply with the goals and applicable policies of the Coastal Management Program in accordance with 16 TAC § 25.102(a)?

b. Will the facilities have any direct and significant effects on any of the applicable coastal natural resource areas specified in 31 TAC § 501.3(b)?

11. Are the circumstances for this line such that the seven-year limit discussed in section III of this Order should be changed?

12. Will anything occur during construction that will preclude or limit a generator from generating or delivering power or that will adversely affect the reliability of the ERCOT system?

13. If complete or partial agreement of the parties is reached on a route that relies on modifications to the route segments as noticed in the application, please address the following issues:

a. Did the applicants comply with the additional notice requirements of 16 TAC § 22.52(a)(2) and (a)(3)(C)?

b. Was written consent obtained from landowners directly affected by the proposed modifications to the route segments?

Q. Which issues in this proceeding have you addressed in your testimony?

A. I have addressed the issues from the Order of Referral and Preliminary Order and the requirements of PURA § 37.056, 16 TAC § 25.101.

Q. What have you relied upon or considered to reach your conclusions and make your recommendation?

A. I have relied upon my review and analysis of the data contained in application and the application's accompanying attachments, including the *Environmental Assessment*⁴ (EA) prepared by Power Engineers. I have also relied upon my review of the direct testimonies and statements of position filed in this proceeding by or on behalf of Joint Applicants and the intervenors and responses to requests for information.

III. RECOMMENDATIONS

Q. Based on your evaluation of the Joint Application, what conclusions have you reached regarding the application and the Proposed Project?

1. I conclude that the application is adequate, and that Joint Applicants proposed alternative routes are adequate in number and geographic diversity.

⁴ Application Attachment 1.

2. I conclude that the application complies with the notice requirements in 16 TAC § 22.52(a).

3. I conclude that Route 4 is the best route when weighing, as a whole, the factors set forth in PURA § 37.056(c)(4)(A) through (D) and 16 TAC § 25.101(b)(3)(B).

4. I conclude that the mitigation measures provided in my testimony on pages 12-14 are sufficient and that the Joint Applicants have the resources and procedures in place to accommodate the mitigation recommendations.

Q. Did you consider whether the Proposed Project was necessary for the service, accommodation, convenience, or safety of the public in your evaluation?

A. No. The Commission determined that additional transmission facilities were needing to be constructed pursuant to PURA §§ 35.005(b) and 39.203(e)⁵ to ensure safe and reliable electric service in the Lower Rio Grande Valley, and in response, ordered Joint Applicants in Docket No. 52682 to develop a CCN⁶. Therefore, PURA §§ 37.056(c)(1)-(3) and 37.056(c)(4)(E) need not be considered in this Proposed Project.

Q. What recommendation do you have regarding the application?

A. I recommend that the Commission approve Joint Applicants application to amend its CCN to construct the proposed new 345-kV transmission line using double circuit capable monopole steel structures in Cameron County. I also recommend that the Commission order the Joint Applicants to construct the proposed project on Route 4 (Segments A, C,

⁵ Attachment at SG-3.

⁶ Application at 9.

1 E1, E2, O, Q). I further recommend that the Commission include in its order approving the
2 application the following paragraphs to mitigate the impact of the proposed project:

3 1. Joint Applicants shall conduct surveys, if not already completed, to identify pipelines
4 that could be affected by the transmission lines and coordinate with pipeline owners in
5 modeling and analyzing potential hazards because of alternating-current interference
6 affecting pipelines being paralleled.

7 2. If Joint Applicants encounter any archeological artifacts or other cultural resources
8 during project construction, work must cease immediately in the vicinity of the artifact
9 or resource, and the discovery must be reported to the Texas Historical Commission.
10 In that situation, Joint Applicants must take action as directed by the Texas Historical
11 Commission.

12 3. Joint Applicants must follow the procedures to protect raptors and migratory birds as
13 outlined in the following publications: *Reducing Avian Collisions with Power Lines:*
14 *The State of the Art in 2012*, Edison Electric Institute and Avian Power Line Interaction
15 Committee, Washington, D.C. 2012; *Suggested Practices for Avian Protection on*
16 *Power Lines: The State of the Art in 2006*, Edison Electric Institute, Avian Power Line
17 Interaction Committee, and the California Energy Commission, Washington, D.C. and
18 Sacramento, CA 2006; and *Avian Protection Plan Guidelines*, Avian Power Line
19 Interaction Committee and United States Fish and Wildlife Service, April 2005. Joint
20 Applicants must take precautions to avoid disturbing occupied nests and take steps to
21 minimize the burden of construction on migratory birds during the nesting season of
22 the migratory bird species identified in the area of construction.

-
- 1 4. Joint Applicants must exercise extreme care to avoid affecting non-targeted vegetation
2 or animal life when using chemical herbicides to control vegetation within rights-of-
3 way. Joint Applicants must ensure that the use of chemical herbicides to control
4 vegetation within the rights-of-way complies with rules and guidelines established in
5 the Federal Insecticide Fungicide and Rodenticide Act and with Texas Department of
6 Agriculture regulations.
- 7 5. Joint Applicants must minimize the amount of flora and fauna disturbed during
8 construction of the transmission line, except to the extent necessary to establish
9 appropriate right-of-way clearance for the transmission line. In addition, Joint
10 Applicants must revegetate, using native species and must consider landowner
11 preferences and wildlife needs in doing so. Furthermore, to the maximum extent
12 practical, Joint Applicants must avoid adverse environmental influence on sensitive
13 plant and animal species and their habitats, as identified by the Texas Parks and
14 Wildlife Department and the United States Fish and Wildlife Service.
- 15 6. Joint Applicants must implement erosion control measures as appropriate. Erosion
16 control measures may include inspection of the right-of-way before and during
17 construction to identify erosion areas and implement special precautions as determined
18 necessary. Joint Applicants must return each affected landowner' s property to its
19 original contours and grades unless otherwise agreed to by the landowner or the
20 landowner's representative. Joint Applicants are not required to restore the original
21 contours and grades where a different contour or grade is necessary to ensure the safety
22 or stability of the project' s structures or the safe operation and maintenance of the lines.

7. Joint Applicants must use best management practices to minimize the potential impacts to migratory birds and threatened or endangered species.

8. Joint Applicants must cooperate with directly affected landowners to implement minor deviations from the approved route to minimize the burden of the transmission line. Any minor deviations from the approved route must only directly affect landowners who were sent notice of the transmission line in accordance with 16 TAC § 22.52(a)(3) and landowners that have agreed to the minor deviation.

9. Joint Applicants must report the transmission line approved by the Commission its monthly construction progress reports before the start of construction to reflect the final estimated cost and schedule in accordance with 16 TAC § 25.83(b). In addition, Joint Applicants must provide final construction costs, with any necessary explanation for cost variance, after completion of construction when all costs have been identified.

Q. Does your recommended route differ from the routes that Joint Applicants and Power Engineers, Inc. believe best addresses the requirements of PURA and the Commission' rules?

A. No. My recommended route is the same as Joint Applicants and Power Engineers recommendation. Joint Applicants and Power Engineers have identified Route 4 as the route that best addresses the requirements of PURA and the Commission's rules.⁷

⁷ Application at 11.

IV. ROUTING**A. DESCRIPTION OF THE PROJECT****Q. Please describe the Project.**

A. The proposed project will consist of a new 345-kV transmission line to be built on double circuit capable monopole steel structures, with one circuit installed initially, in Cameron County, Texas.⁸ The transmission line will begin at the existing AEP Texas La Palma 345-kV station which is located in the City of San Benito, approximately 0.80 mile south of US Highway Business 77 and approximately 0.30 mile southeast of Farm-to-Market Road (FM) 1846 and extend southeast to the proposed Sharyland Kingfisher 345-kV Station, to be located on the west side of County Road 315 (Casey Road) approximately 0.80 mile south of FM 510 and approximately 0.73 mile southeast of FM 510.⁹ The line will be approximately 4.35 to 20.91 miles depending on which route is selected.¹⁰

Joint Applicants will each construct and own one-half of the proposed project. AEP Texas will construct and own the western portion of the proposed project which terminates into the AEP Texas La Palma Station. Sharyland will construct and operate the eastern portion of the proposed project which terminates into the Sharyland Kingfisher Station.¹¹

Q. Does Joint Applicants' application contain adequate number of proposed alternative routes to conduct a proper evaluation?

⁸ Application at 5.

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Id.*

1 A. Yes. Joint Applicants proposed 19 alternative routes.¹²

2 **Q. What are the lengths of the proposed alternative routes?**

3 A. The table below shows the lengths of the proposed alternative routes.¹³

Route	Length of alternative route
1	4.35
2	4.91
4	4.92
5	5.48
3	5.58
6	5.72
7	5.72
19	5.73
8	7.22
12	7.41
10	7.46
9	7.52
11	7.59
14	10.25
15	10.38
17	10.38
13	10.47
16	10.60
18	10.91

4

5 As the table illustrates, Route 4 is the third shortest proposed alternative route.

6 **Q. Is the Project located within the incorporated boundaries of any municipality?**

¹² Application, Attachment 1 at 125.

¹³ Application, Attachment 1 at Table 3-1.

1 A. Yes, it is located in the City of San Benito, Texas.¹⁴

2 **Q. Does any part of the Project lie within the Texas Coastal Management Program**
3 **(TCMP) boundary?**

4 A. No.¹⁵

5

6 **B. COMMUNITY VALUES**

7 **Q. Have Joint Applicants sought input from the local community regarding community**
8 **values?**

9 A. Yes. Joint Applicants held three public meetings as required by 16 TAC § 22.52(a)(4). The
10 meetings were held on March 8 and 9, 2022 at the San Benito Cultural Heritage Museum,
11 and on April 12, 2022 at the San Benito High School in the City of San Benito, Texas.¹⁶
12 Due to COVID-19, the public meetings were accessible virtually from the AEP Texas
13 Website.

14 Joint Applicants sent notice of the meeting to 496 landowners who own property located
15 within 500 feet of the preliminary alternative link centerlines.¹⁷ A total of 65 individuals
16 attended the March 8, 2022, public meeting with 11 submitting questionnaire responses at
17 the meeting.¹⁸

¹⁴ Direct Testimony of Eric W. Scott at 15.

¹⁵ Application at 17.

¹⁶ Application at 12.

¹⁷ Application, Attachment 1 at 107

¹⁸ Application, Attachment 1 at 109

1 A total of 18 individuals attended the March 9, 2022, public open house meeting, with 10
2 submitting questionnaire responses at the meeting.¹⁹ Following the March open house
3 meetings on March 8 and 9, 2022, Joint Applicants modified and added preliminary
4 alternative links L, AO, AP, and AQ. Joint Applicants hosted a third open house meeting
5 for landowners located near the newly added alternative links.²⁰ A total of 26 individuals
6 attended the April 12, 2022, public open house meeting, with five submitting questionnaire
7 responses at the meeting.²¹

8 A total of 50 questionnaires commenting on the proposed project were received by Joint
9 Applicants after the April 12, 2022, public meeting by mail.²²

10 **Q. Did members of the community who attended the public meeting or intervene in this**
11 **case express concerns about the proposed project?**

12 A. Section 3.3.2 of Attachment 1 of the application, the EA, contains a discussion and
13 summary of the questionnaire responses. The respondents were asked to rank 13 criteria in
14 routing the project that they considered to be the most important. The most important were:
15 maximizing distance from residences, business, and schools; maximizing length along
16 property boundary lines; minimizing impacts on streams and rivers; and minimizing length
17 across cropland.²³

¹⁹ Application, Attachment 1 at 111.

²⁰ Application, Attachment 1 at 112.

²¹ Application, Attachment 1 at 115.

²² Application, Attachment 1 at 116.

²³ Application, Attachment 1 at 109-118.

Q. In your opinion, would construction of the proposed project on Route 4 mitigate the concerns expressed by members of the community at the open houses and in comments by intervenors?

A. In my opinion, Route 4 would mitigate some of the concerns of the land owners who provided feedback to the Joint Applicants. The number of habitable structures within 500 feet of the centerlines of the 19 alternative routes ranges from 30 on Route 17 to 121 on Route 8.²⁴ Route 4 has 47 habitable structures within 500 feet of the centerline of the right-of-way.²⁵ The combined length of each route that parallels existing transmission line rights-of-way, roads and other compatible rights-of-way, and apparent property lines (combined parallel criteria) for all 19 routes ranges from 65% (Route 1) to 89% (Routes 7 and 19) of the total length of the routes.²⁶ Route 4 has a total combined parallel criterion of 84% of the route.²⁷ Route 4 also has the second shortest length of right-of-way across open water, and the fourth fewest number of stream or canal crossings.²⁸ Route 4 has the fourth shortest distance across cropland.²⁹

Q. Are property values and the impact on future or potential development factors that are considered by the Commission in a CCN proceeding under PURA § 37.056(c)(4) or in 16 TAC § 25.101(b)(3)(B)?

²⁴ Application, Attachment 1 at Table 4-1

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.*

²⁹ *Id.*

A. No. PURA and the Commission's rules do not list these two issues as factors that are to be considered by the Commission in a CCN proceeding. However, these rules do require consideration of using or paralleling existing right-of-way, which may minimize concerns about the impact on property values or planned development.

C. RECREATIONAL AND PARK AREAS

Q. Are any parks or recreational areas located within 1,000 feet of the centerline of any of the alternative routes?

A. No.³⁰

D. HISTORICAL VALUES

Q. Are there possible impacts from the proposed project on archeological and historical values, including known cultural resources crossed by any of the proposed alternative routes or that are located within 1,000 feet of the centerline of any of the alternative routes?

A. There is 1 previously recorded archeological or historical sites within the study area.³¹ There are two cemeteries that are recorded within 1,000 feet of the proposed alternative route centerlines; however, they are not crossed by any of the primary alternative routes.³² The San Benito City cemetery is approximately 163 feet from Alternative Routes 1, 2, 3,

³⁰ Application, Attachment 1 at Table 4-1.

³¹ Application, Attachment 1 at Table 2-6.

³² Application, Attachment 1 at 139.

and 4; approximately 758 feet from Alternative Route 5; and approximately 952 feet from Alternative Routes 6, 7, and 19.³³ The Mont Meta Memorial Park cemetery is approximately 123 feet from Alternative Routes 13, 14, 15, 16, 17, and 18.³⁴ There are no recorded cultural resource sites that are crossed or are within 1,000 feet of the centerlines of the primary alternative routes.³⁵ None of the primary alternative routes cross or are located within 1,000 feet of any National Register of Historic Places (NRHP) listed property³⁶; however, all of the alternative routes are located within one NRHP-eligible irrigation district for listing.³⁷

If any further archeological or cultural resources are found during construction of the proposed transmission line, Joint Applicants should immediately cease work in the vicinity of the archeological or cultural resources and should immediately notify the Texas Historical Commission.

E. AESTHETIC VALUES

Q. What are the potential impacts on aesthetic values from the proposed project?

A. The study area is primarily suburban with residential, commercial, and light industrial development scattered throughout.³⁸ The predominant land use within the study area is

³³ Application, Attachment 1 at 140

³⁴ *Id.*

³⁵ Application, Attachment 1 at Table 4-1.

³⁶ Application at 17.

³⁷ Application Attachment 1 at 139-140.

³⁸ Application Attachment 1 at 52.

1 cropland.³⁹ The majority of the study area has been impacted by land improvements
2 associated with agriculture, roadways, oil and gas activities, and utilities.⁴⁰

3 **Q. In your opinion, which of the alternative routes will have a negative impact on**
4 **aesthetic values and which portions of the study area will be affected?**

5 A. In my opinion, all of the alternative routes will result in some temporary and permanent
6 negative impacts to aesthetic values. The temporary impacts involving construction and
7 right-of-way clearing. The permanent impacts involve the visibility of transmission lines
8 and poles from habitable structures, US and state highways, and FM roads.

9 **Q. In your opinion, how will the negative impact on aesthetic values of Route 4 compare**
10 **to the negative impact of the other alternative routes?**

11 A. None of the alternative routes cross or are within foreground visual zone of
12 parks/recreational areas.⁴¹ All of the routes have two US or State Highway crossings and
13 between one to three FM road crossings.⁴² Route 4 has the 2nd least estimated length of
14 right-of-way within foreground visual zone of US and state highways and Route 4 has the
15 3rd least Estimated length of right-of-way within foreground visual zone of FM roads.⁴³
16 Route 4 is the third shortest route at 4.92 miles, of which 3.12 miles parallels existing

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ Application, Attachment 1 at Table 4-1

⁴² *Id.*

⁴³ *Id.*

transmission right-of-way.⁴⁴ In my opinion, Route 4 performs among the best from an aesthetic values perspective.

F. ENVIRONMENTAL INTEGRITY

Q. Please provide a general description of the area traversed by the proposed alternative routes.

A. The area traversed by the project is within the Coastal Prairies Sub-Province of the Gulf Coastal Plains Physiographic Province.⁴⁵ The Coastal Prairies Sub-Province is characterized by level terrain with deltaic sand and mud bedrock types. The study area elevations range from 20 feet above mean sea level (amsl) to 25 feet amsl.⁴⁶

Q. What was involved in your analysis of the environmental impact of the proposed project?

A. I reviewed the information provided in the application and the EA, the direct testimonies and statements of position of the intervenors, and responses to requests for information

Q. Did your analysis include the review of the Texas Parks and Wildlife (TPWD) recommendations and informational comments following their review of the Application?

⁴⁴ *Id.*

⁴⁵ Application at 7

⁴⁶ *Id.*

1 A. No. At the time of filing this testimony, TPWD had not yet filed their recommendations
2 and comments regarding the Application.

3 **Q. Based on your review of the information identified above, in your opinion, will the**
4 **proposed project present a significant negative impact to environmental integrity?**

5 A. I do not believe so. Transmission lines do not often create many long-term impacts on soils.
6 Most of those impacts will be during initial construction particularly in sensitive areas
7 including wetlands and woodlands and would be due to erosion and soil compaction;
8 however, Joint Applicants will employ erosion control during initial construction.⁴⁷
9 Impacts on vegetation would be the result of clearing and maintaining the right-of-way,
10 and the length of upland woodland or brushland along the right-of-way of the proposed
11 alternative routes ranges from approximately 1.2 miles for Route 13 to 2.92 miles for Route
12 18 with Route 4 at approximately 1.42 miles.⁴⁸ The length of bottomland or riparian
13 woodlands along the right-of-way of the proposed alternative routes ranges from none for
14 Routes 6, 7, and 19 to 0.55 miles for Routes 15, 16, 17 with Route 4 at 0.32 miles.⁴⁹ The
15 length of right of way of the proposed alternative routes across NWI mapped wetlands
16 ranges from 0.01 miles for Routes 1 and 9 to 0.23 miles for Routes 2, 3, and 4.⁵⁰
17 None of the proposed alternative routes are within any critical known habitats of federally
18 listed threatened or endangered species.⁵¹ There are a few Species of Greatest Conservation

⁴⁷ Application, Attachment 1 at 142

⁴⁸ Application, Attachment 1 at Table 4-1

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ *Id.*

1 Need (SGCN)⁵² that may occur in the project area including reptiles and plants and if
2 encountered Joint Applicants should make best efforts to avoid any disturbance. In my
3 opinion, Joint Applicant's implementation of design and construction practices and
4 techniques that are usual and customary in the electric utility industry can minimize the
5 potential negative impacts to the local environment.

6 **Q. In your opinion, how would construction of the proposed project on Route 4 compare**
7 **from an environmental perspective to construction on the other 19 routes?**

8 A. Route 4 ranks well among the proposed alternative routes in most environmental integrity
9 categories. Route 4 parallels the greatest length of existing transmission right-of-way, is
10 the second shortest distance across 100-year floodplains at 1.17 miles, is tied at the second
11 shortest distance across open water at 0.10 miles, is tied for fourth for the least number of
12 stream crossings at 13.⁵³

13 **Q. Do you conclude that Route 4 is acceptable from an environmental and land use**
14 **perspective?**

15 A. Yes. I conclude that Route 4 performs among the best from an environmental perspective.
16

17 **G. ENGINEERING CONSTRAINTS**

18 **Q. Are there any possible engineering constraints associated with this project?**

⁵² Application, Attachment 1 Appendix A at 41-43.

⁵³ Application, Attachment 1 at Table 4-1.

A. I do not believe there are specific engineering constraints that are unusual with regard to a transmission line project and that cannot be adequately addressed by using electric utility industry design and construction practices and standards.

Q. Are there any special circumstances in this project that would warrant an extension beyond the seven-year limit for the energization of the lines?

A. No, Joint Applicants have not described any special circumstances that would merit an extension of this limit for this project.

H. COSTS

Q. What are Joint Applicants' estimated costs of constructing the proposed project on each of the proposed alternative routes?

A. The table below shows the total estimated cost for each of the routes from least to most expensive alternative route:⁵⁴

Route	Estimated Cost AEP TX	Estimated Cost Sharyland	Estimated Cost Total
1	\$15,649,000	\$14,473,000	\$30,122,000
4	\$13,927,000	\$16,217,000	\$30,144,000
2	\$14,288,000	\$16,295,000	\$30,583,000
5	\$15,394,000	\$17,226,000	\$32,620,000
3	\$15,964,000	\$17,100,000	\$33,064,000
6	\$15,667,000	\$18,037,000	\$33,704,000
7	\$16,034,000	\$18,037,000	\$34,071,000
19	\$16,670,000	\$18,050,000	\$34,720,000
12	\$19,618,000	\$20,597,000	\$40,215,000
8	\$20,782,000	\$19,868,000	\$40,650,000
11	\$20,269,000	\$21,051,000	\$41,320,000

⁵⁴ Application, Attachment 1 at Table 4-1.

10	\$22,214,000	\$20,998,000	\$43,212,000
9	\$21,609,000	\$21,736,000	\$43,345,000
15	\$26,713,000	\$24,558,000	\$51,271,000
16	\$25,867,000	\$25,546,000	\$51,413,000
17	\$27,080,000	\$24,649,000	\$51,729,000
14	\$28,275,000	\$24,558,000	\$52,833,000
18	\$26,353,000	\$26,683,000	\$53,036,000
13	\$30,921,000	\$25,317,000	\$56,238,000

As the table illustrates, Route 4 is the second least expensive proposed alternative route.

Q. Could you briefly discuss the least expensive route and why Route 4 is still preferred?

A. Route 1, the least expensive route, has almost double the amount of habitable structures within 500 feet of its centerline compared to Route 4 and utilizes less percentage of right-of-way parallel to existing combined right-of-way (transmission lines, highways, property lines) compared to Route 4.⁵⁵ Also, Route 1 has a higher length of right-of-way across upland woodlands/brushlands and across open water, and higher number of resaca crossings.⁵⁶ The difference in estimated costs between Route 1 and Route 4 is minimal, with only \$22,000 separating the two.⁵⁷

Q. Do Joint Applicants' estimated costs of constructing the proposed project appear to be reasonable?

A. Yes. However, the reasonableness of the final installed cost of the completed project will be determined at a future date during transmission cost-of-service proceedings.

⁵⁵ Application, Attachment 1 at Table 4-1

⁵⁶ *Id.*

⁵⁷ *Id.*

**I. MODERATION OF IMPACT ON THE AFFECTED COMMUNITY AND
LANDOWNERS**

Q. Do the Commission's rules address routing alternatives intended to moderate the impact on landowners?

A. Yes. Under 16 TAC § 25.101(b)(3)(B), "the line shall be routed to the extent reasonable to moderate the impact on the affected community and landowners unless grid reliability and security dictate otherwise."

Q. After filing its application, have Joint Applicants made or proposed any routing adjustments to accommodate landowners?

A. Not to my knowledge. However, following the second public meeting, Joint Applicants modified and added preliminary alternative links L, AO, AP, and AQ and hosted a third public meeting for the affected landowners near the newly added links.⁵⁸

Q. Have Joint Applicants proposed any specific means by which it will moderate the impact of the proposed project on landowners or the affected community other than adherence to the Commission's orders, the use of good utility practices, acquisition of and adherence to the terms of all required permits, and what you have discussed above?

A. Not to my knowledge.

⁵⁸ Application, Attachment 1 at 12.

J. RIGHT OF WAY

Q. Do the Commission's rules address routing along existing corridors?

A. Yes. The following factors are to be considered under 16 TAC § 25.101(b)(3)(B)

(i) Whether the routes utilize existing compatible rights-of-way, including the use of vacant positions on existing multiple-circuit transmission lines;

(ii) Whether the routes parallel existing compatible rights-of-way;

(iii) Whether the routes parallel property lines or other natural or cultural features; and

(iv) Whether the routes conform with the policy of prudent avoidance.

Q. Describe how Joint Applicants propose to use existing, parallel, or compatible right-of-way for the proposed project.

A. Each proposed alternative route parallels apparent property boundaries and parallels or utilizes existing compatible rights-of-way. The percentage of Route 4's length that parallels or utilizes existing compatible right-of-way and apparent property boundaries is approximately 84% of its length.⁵⁹ The table below summarizes the overall length, the length parallel to compatible rights-of-way or to property boundaries, and the total percentage of parallel rights-of-way used by the proposed alternative routes. Existing pipeline rights-of-way are not listed as compatible rights-of-way under 16 TAC § 25.101(b)(3)(B).

Route	Length of alternative route	Length Parallel to Right-of-Way	Percentage
19	5.73	5.09	89%

⁵⁹ Application, Attachment 1 at Table 4-1.

7	5.72	5.07	89%
6	5.72	4.96	87%
3	5.58	4.79	86%
2	4.91	4.21	86%
9	7.52	6.44	86%
8	7.22	6.11	85%
12	7.41	6.24	84%
4	4.92	4.11	84%
11	7.59	6.34	84%
10	7.46	6.23	84%
18	10.91	8.86	81%
14	10.25	8.28	81%
17	10.38	8.38	81%
5	5.48	4.40	80%
15	10.38	8.28	80%
16	10.60	8.40	79%
13	10.47	8.14	78%
1	4.35	2.82	65%

As the table illustrates, Route 4 is third shortest route and is tied for the 5th highest percentage of compatible right-of-way compared to the other proposed alternative route.

K. PRUDENT AVOIDANCE

Q. Define prudent avoidance.

A. Prudent avoidance is defined by 16 TAC § 25.101(a)(6) as follows: "The limiting of exposures to electric and magnetic fields that can be avoided with reasonable investments of money and effort."

Q. How can exposure to electric and magnetic fields be limited when routing transmission lines?

A. Exposure to electric and magnetic fields can primarily be limited when routing transmission lines by proposing alternative routes that would minimize, to the extent reasonable, the number of habitable structures located in close proximity to the proposed routes.

Q. How many habitable structures are located in close proximity to each of the proposed alternative routes?

A. The table below ranks the number of habitable structures that are within 500 feet of the centerline of the proposed alternative routes in this project.⁶⁰

Route	Number of Habitable Structures
17	30
15	33
16	37
14	42
2	44
18	44
13	45
4	47
11	51
5	54
3	56
7	58
12	59
6	61
10	63
9	64
19	64
1	83
8	121

⁶⁰ Application, Attachment 1 at Table 4-1.

There are 47 habitable structures within 500 feet of the centerline of Route 4.

Q. Do you conclude that Joint Applicants' proposed alternative routes have minimized, to the extent reasonable, the number of habitable structures located in close proximity to the routes?

A. The Joint Applicants have designed its proposed segments in such a way as to minimize, to the extent reasonable, the number of habitable structures located in close proximity to the routes. However, some routes perform better in this area than others.

V. CONCLUSION

Q. In your opinion, is any one of the proposed alternative routes better than all of the other routes in all respects?

A. No.

Q. If no proposed alternative route is better than all of the others in all respects, why have you recommended Route 4 instead of the other proposed alternative routes?

A. In summary, after analyzing all the factors that the Commission must consider under PURA § 37.056 and 16 TAC § 25.101, I conclude that Route 4 best meets the criteria of PURA and the Commission's rules because: (1) Route 4 is the 2nd least expensive proposed route at \$30,144,000.00 which is only \$22,000.00 more than the cheapest route; (2) Route 4 is on the lower end of the number of habitable structures within 500 feet of the centerline of any of the proposed routes with 47; (3) Route 4 has the second shortest distance across

1 100-year floodplains at 1.17 miles; and (4) Route 4 is the third shortest route and parallels
2 84% of its length by existing compatible right-of-way and has no recorded cultural resource
3 sites within 1,000 feet of its right-of-way. Route 4, like all of the proposed alternative
4 routes, has some advantages and some disadvantages as I have discussed in my testimony.
5 However, I consider Route 4 overall to have the most advantages and to be comparatively
6 superior to the other proposed alternative routes when weighing all of the factors described
7 in my testimony.

8 **Q. Does this conclude your testimony?**

9 **A. Yes.**

Attachment SG-1

Qualifications of Sherryhan Ghanem

SHERRYHAN GHANEM

SUMMARY

Experienced Electrical Engineer with a demonstrated history of working in the oil & energy industry. Skilled in analytical skills, project management, communication, and teamwork.

EDUCATION

Bachelor of Science in Electrical Engineering (2018),
Applied Mathematics Minor
GPA: 3.5

New Jersey Institute of Technology,
Newark College of Engineering, Newark, NJ

Master of Science in Engineering Management (In Progress),

New Jersey Institute of Technology,
Newark College of Engineering, Newark, NJ

WORK EXPERIENCE

PUBLIC UTILITY COMMISSION OF TEXAS, Austin, TX

2021 - Present

Engineering Specialist

Infrastructure Division

- Apply engineering principles to evaluate and audit engineering and technical issues to provide recommendations regarding facility planning, construction, and operations and maintenance in the electric and water industries
- Participate in the winter weatherization rulemaking for electric utilities in conjunction with the Electric and Reliability Council of Texas as a response to the February 2021 winter storm that impacted electrical infrastructure in Texas
- Prepare written testimony for filing in contested proceedings, such as certificate of convenience and necessity, fuel reconciliation, and rate proceedings
- Demonstrate a spirit of teamwork and collaboration across several divisions including Market Analysis, Rate Regulation, and Legal, offering positive and constructive ideas and support to the team

EXXONMOBIL PIPELINE COMPANY, Houston, TX

2019 - 2020

Field Electrical Engineer

Fuels and Lubes

- Led, managed, and created technical designs for electrical and multidisciplinary projects at various pipeline stations and fuels terminals including PLC upgrades and power management solutions
- Troubleshoot and provided technical support for field operations in the event of power or control systems failure
- Communicated, scheduled, and coordinated with a team of engineers, operators, technicians, and contractors to execute projects from design to construction
- Programmed Allen Bradley PLCs in various RSLogix models to automate processes at pipeline stations and terminals

PSEG NUCLEAR, Salem, NJ

2018

Technical Intern

Corporate/Design Engineering

- Revised Performance Centered Maintenance templates to adhere to industry standards set by the Electric Power Research Institute and updated procedures
- Reviewed and analyzed electrical drawings for various tasks in the plant including risk analyses and conducted walk downs into the plant to inspect different systems

SCHINDLER ELEVATOR CORPORATION, Morristown, NJ

2018

Electrical Engineering Intern

Field Support Group

- Led the preparation and maintenance of lab equipment for testing
- Read schematics to build, wire, and test elevator simulators using proprietary company software

KEARFOTT CORPORATION GUIDANCE AND NAVIGATION DIVISION, Little Falls, NJ

2017

Engineering Summer Intern

Guidance and Navigation Division

- Collaborated with a team of interns to produce all documentation, software, 3D CAD models required to create an automated version of substrate inspection
- Tested and evaluated quartz and MEMS accelerometers using a tilt table, thermal chamber, and vertical shaker

MATH TUTORING CENTER, Newark, NJ

2016 - 2018

Math Tutor

New Jersey Institute of Technology

- Tutored students in Pre-calculus, Trigonometry, Calculus I, II, III, and Differential Equations
- Led math recitation classes with the Teacher's Assistant

LEADERSHIP**INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, Newark, NJ**

2017 - 2018

Event Coordinator

- Planned and organize educational workshops and coordinate with companies to hold information sessions
- Met weekly with board members and advisor to discuss club goals and progress

SOCIETY OF WOMEN ENGINEERS, Newark, NJ

2015 - 2017

Event Coordinator (2016), Membership Chair (2015)

- Planned educational and social events to keep current members engaged and to expand membership
- Effectively communicated with fellow board members on a weekly basis to discuss progress

STUDENT SENATE, New Jersey, Newark, NJ

2016 - 2017

Electrical Engineering Representative

- Held feedback sessions for ECE students and meet with the chair of the ECE Department to implement changes reflective of constituents' requests
- Served on a standing committee and attended weekly meetings to share progress and plan events for the students

PROFESSIONAL ASSOCIATIONS

- Eta Kappa Nu IEEE Honor Society
- Tau Beta Pi Engineering Honor Society NJ Gamma Chapter
- Society of Women Engineers (SWE)
- Institute for Electrical and Electronics Engineers (IEEE)

SKILLS

- Microsoft Office Suite, MultiSim, Java, Matlab, RSLogix, SKM Power Tools

Attachment SG-2

List of Dockets Containing Testimony of Sherryhan Ghanem

Application of Entergy Texas, Inc. to Amend its Certificate of Convenience and Necessity to Construct Orange County Advanced Power Station, SOAH Docket No. 473-22-1074, PUC Docket No. 52487

Attachment SG-3**PURA §§ 35.005(b) and 39.203(e)**

Sec. 35.005. AUTHORITY TO ORDER TRANSMISSION SERVICE.

(b) The commission may require transmission service at wholesale, including the construction or enlargement of a facility.

Sec. 39.203. TRANSMISSION AND DISTRIBUTION SERVICE.

(e) The commission may require an electric utility or a transmission and distribution utility to construct or enlarge facilities to ensure safe and reliable service for the state's electric markets and to reduce transmission constraints within ERCOT in a cost-effective manner where the constraints are such that they are not being resolved through Chapter 37 or the ERCOT transmission planning process. The commission shall require an electric utility or a transmission and distribution utility to construct or enlarge transmission or transmission-related facilities for the purpose of meeting the goal for generating capacity from renewable energy technologies under Section 39.904(a). In any proceeding brought under Chapter 37, an electric utility or transmission and distribution utility ordered to construct or enlarge facilities under this subchapter need not prove that the construction ordered is necessary for the service, accommodation, convenience, or safety of the public and need not address the factors listed in Sections 37.056(c)(1)-(3) and (4)(E). Notwithstanding any other law, including Section 37.057, in any proceeding brought under Chapter 37 by an electric utility or a transmission and distribution utility related to an application for a certificate of public convenience and necessity to construct or enlarge transmission or transmission-related facilities under this subsection, the commission shall issue a final order before the 181st day after the date the application is filed with the

commission. If the commission does not issue a final order before that date, the application is approved.