

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

Electronic Application Of Kentucky Utilities)	
Company For A Certificate Of Public Convenience)	
And Necessity For The Construction Of)	Case No. 2022-00066
Transmission Facilities In Hardin County, Kentucky)	

DIRECT TESTIMONY OF GÜNEŞ DEMİRBAŞ, PE
G-TOWER, PLLC
ON BEHALF OF FRANK D. BROWN AND MARTHA V. BROWN

1 **Please state your name, employer, position, and business address.**

2 My name is Güneş Demirbaş. I am president and owner of G-Tower, PLLC (“G-Tower”), and
3 my business address in the United States is 4571 Broadway St., Boulder, CO 80304.

4 **Please summarize your educational background and professional experience.**

5 I hold a Bachelor of Science in Civil Engineering and a Master of Science in Civil Engineering
6 (Geotechnical) from Middle East Technical University’s (“METU”) ABET accredited
7 engineering program. I am a Professional Engineer licensed in Colorado and Texas. I have more
8 than fifteen years of professional experience in engineering, project management, and marketing,
9 and I specialize in the tower portion of energy infra-structure projects. I have worked for two
10 reputable tower manufacturers in the industry: Valmont Industries and Mitas Energy. I also have
11 international business experience, including being involved in the engineering and project
12 management of several wind energy, electric transmission line, wireless and lighting pole and
13 tower supply projects with more than twenty utilities and contractors on five continents (North
14 America, Europe, Asia, Africa and South America). I founded G-Tower in 2013 and am its
15 current owner and president. A copy of my resume is attached to my testimony as **Exhibit 1**.

16 **Can you tell me more about the types of engineering services that G-Tower provides?**

17 Yes. G-Tower engineers provide tailored engineering solutions for various industries in the
18 United States, Canada, Turkey, and Chile, including electric power transmission, wind power,
19 solar power, telecommunication, and lighting. G-Tower provides engineering services for the
20 following:

- 21 • Transmission line design
- 22 • Lattice tower design
- 23 • Tubular pole design
- 24 • Foundation design

- 1 • Drafting and detailing
- 2 • Finite element analysis
- 3 • Tower accessories design
- 4 • Engineering review
- 5 • Cost estimates

6 **Has G-Tower been engaged for engineering design or consulting services on other**
7 **transmission projects?**

8 Yes. G-Tower has been engaged on several transmission projects. Attached to my direct
9 testimony as **Exhibit 2** is a list and description of transmission line key projects for which G-
10 Tower has been engaged over the last nine years.

11 **On whose behalf are you testifying?**

12 I am testifying on behalf of intervenors Frank and Martha Brown (“the Browns”).

13 **What is the purpose of your testimony?**

14 The purpose of my testimony is to present and explain the report generated by me which contains
15 the engineering review findings on the Browns’ proposed alternative routes for the Glendale
16 West 345 kV Transmission Line proposed by Kentucky Utilities Company (“KU”) with respect
17 to Parcel ID Nos. 190-30-00-020 and 207-00-00-010 (“Brown Parcels”).¹ This report
18 (“Engineering Report”) is attached to my direct testimony as **Exhibit 3**.

19 **Please generally describe each of the alternate routes proposed by the Browns?**

¹ The Brown Parcels are depicted on KU’s Attachment 1 to Response to PSC-1 Question No. 1, Pages 14 and 24 (filed April 8, 2022).

1 The Brown Parcels and the general descriptions of the Browns' proposed alternative routes are
2 described in the direct testimony of Witness Allen Summers. Mr. Summers' descriptions of the
3 Browns' proposed alternatives are reproduced below:

4 Alternative B: Shows potential alternate route of the Glendale West 345 kV
5 Transmission Line over existing sewer easements on the Brown Parcels to minimize
6 impact to the Brown's property.

7 Alternative C: Shows potential alternate route of the Glendale West 345 kV
8 Transmission Line to run along the western-most boundary line of the Brown Parcels and
9 over existing sewer drainage easements to minimize impact.

10 Alternative D: Shows potential alternate route of the Glendale West 345 kV
11 Transmission Line to run parallel and in tandem with the Glendale East 345 kV
12 Transmission Line as it is proposed in KU's application. This alternative would route the
13 Glendale West 345 kV Transmission Line completely around the Brown Parcels.

14 Alternative E: Shows potential alternate route of the Glendale West 345 kV
15 Transmission Line to run towards the Glendale East 345 kV Transmission Line then
16 across a small portion of one of the Brown Parcels before running parallel with the
17 Glendale East 345 kV Transmission Line.

18 **Did you review the engineering feasibility of these proposed routes?**

19 Yes. The Engineering Report details my findings on the engineering feasibility of the Browns'
20 proposed alternative routes. Some of the Browns' proposed alternative routes would require
21 additional structures or conductor length (Alternatives B, D, and E) if constructed. However,
22 each of the Browns' proposed alternatives are feasible from an engineering perspective, based on
23 the data currently available at the time the report was generated.

24 **Which alternative do the Browns propose in lieu of KU's proposed route across the Brown
25 Parcels?**

26 I understand that if the Commission grants KU a CPCN to construct the Glendale West 345 kV
27 Transmission Line, and if it must cross the Brown Parcels, the Browns propose that Alternative
28 C be constructed in lieu of KU's proposed route.

1 **Will you please describe Alternative C in relation to KU's proposed route?**

2 Generally, the centerline as proposed by KU would be moved to the west and follow the western
3 property boundary of the Brown Parcels approximately 100 feet from the property boundary to
4 account for the right-of-way.

5 The termination dead-end tower on the north side of the Glendale South Substation would be
6 moved towards the west by approximately 250 feet from the location proposed by KU. The line
7 would run north from the termination dead-end tower in a straight line to the northwest corner of
8 the Brown Parcels passing through two tangent structures located on the Brown Parcels
9 approximately 100 feet from the western property line of the Brown Parcels. The line would then
10 connect to a running angle structure located at the northwest corner of the Brown Parcels, before
11 proceeding northwest toward the structure KU has proposed to locate on Parcel No.
12 189.00.00.018.05. Please see Figure 1 in the Appendix to Exhibit 3 for a rendering of Alternative
13 C as I have described.

14 Based on my preliminary engineering review, Alternative C is approximately 200 feet shorter
15 than the route proposed by KU. Alternative C (including the required right-of-way) also would
16 still be located entirely within the confines of the Brown Parcels, and within the 500-foot
17 corridor that KU has requested within which to move the line after receiving a CPCN from this
18 Commission. As such, it is my understanding that Alternative C would not require any additional
19 landowner notifications or additional easement acquisition.

20 **Based on your knowledge and experience, would you recommend Alternative C as a viable**
21 **alternative to KU's proposed route across the Brown Parcels?**

22 Yes. Considering that the proposed transmission line is at its preliminary design stage, the line
23 design and substation design are not finalized and can be revised. That said, for Alternative C,

1 from a structural engineering point of view, I do not see any issues with moving the proposed
2 line towards the west of the Brown Parcels. If structures are relocated (refer to Figure 1), and the
3 angle of the line is moved towards the northwest corner of parcel number 190-00-30-020,
4 Alternative C would neither increase the structure count nor require additional conductor length.
5 It therefore is feasible to consider the relocation as proposed. Even though the structures would
6 be moved towards the property line on the west side, the line will remain within the proposed
7 corridor and the connection point to Glendale South Substation will not substantially change. I
8 do not anticipate any additional cost shall be incurred by such a revision. In fact, because
9 Alternative C would not require any additional structures than those already accounted for by
10 KU, and because the route would be approximately 200 feet shorter than the route proposed by
11 KU, I estimate that Alternative C could cost approximately \$50,000 less to construct.
12 The construction of every transmission line will have geotechnical uncertainties at its
13 preliminary stage. I also note that the use of deep foundations will be required for the electric
14 transmission structures within the right-of-way. However, a detailed geotechnical study has not
15 yet been carried out by KU, and this should not be a concern or restraint at this time.
16 Further, based on our review, Alternative C is not geographically far away from the route
17 proposed by KU (refer to Figure 1). Thus, the geotechnical conditions will not be significantly
18 different for Alternative C than KU's proposed route.
19 Considering the future social and commercial impact of the proposed KU transmission line and
20 the current unavailability of engineering and geotechnical studies completed at this time, I
21 believe that the Glendale West 345 kV Transmission line can be routed consistent with
22 Alternative C (refer to Figure 1) – towards the western property boundary of the Brown Parcels
23 with no or minimal cost to KU.

1 **Does this conclude your testimony?**

2 Yes.

5/2022
(A)

APOSTILLE
(Convention de La Haye du 5 Octobre 1961)

Ülke/Country/Pays/Staat TÜRKİYE - LA TURQUIE

İşbu resmi belge/This public document/Le présent acte public/Dieses zeugnis wurde

2. Sibel YALÇIN tarafından imzalanmıştır./Has been signed by/a été signé par/durch ...
unterschrieben

3. İmzalayanın sıfatı Yetkili Katip'dir./Acting in the capacity of/Agissant en qualité de/Titel des
Unterzeichneten

4. ANKARA 43 NOTERLİĞİ 'nin mühür/damgasını taşımaktadır-bears the seal/stamp of-/est
revêtu du sceau/timbre de-trägt Siegel/Stempel von

TASDİK / CERTIFIED / ATTESTE / BEGLAUBIGUNG:

5. Yenimahalle Kaymakamlığı' da/at/à/in

6. 10.05.2022 günü/the/le/Am

7. Şef Emriye KAMACI tarafından/by/par/durch den/die

8. No : 31681 ile tasdik edilmiştir./No:/sous No:/unter Nr.

9. Mühür - Damga/Seal-stamp/Sceau-
timbre/Siegel-Stempel

10. İmza/Signature/Signature/Unterschrift:

personal no. 38, father's name Turhan, mother's name Seçkin, date of birth
27.08.1982, place of birth Zonguldak in accordance with the photo affixed Turkish
Republic identification card, given by Çankaya Civil Registration Directorate, dated
11/08/2009, registration 38287, serial R11 and numbered 419967 and declares
that he is literate, and currently resides at the address stated above. (Tenth of May
Two Thousand and Twenty Two, Tuesday) 10/05/2022

43rd Notary Office in and for Ankara
for and on behalf of Halis Sadık UNUTMAZ- Notary
Yusuf UYGURTAŞ - Chief Clerk
(seal and signature)

VAT, Stamp Fee and Valuable Document Fee is collected upon receipt.

YU48 A/S Page: 1 / 0 Code: 8.3.1

NBS No: 202205100060043- 4145617265

A-2 / 1 - 1

COMPLETE and ACCURATE

translation of original Turkish document

Sworn-in Translator: Özgür AYDIN

A-1[®] TERCÜME MERKEZİ
TRANSLATION CENTER

Mareşal Fevzi Çakmak Caddesi
No: 13/6 Beşevler/Çankaya-ANKARA
Tel: (0312) 215 60 30 • aften.eme@gmail.com

İşbu belge tarafımdan Türkçe'den
İngilizce'ye aslına uygun olarak
çevrilmiştir.
Çevirmen : Özgür AYDIN

İşbu belge Noterliğimizin yeminli
çevirmeni Özgür AYDIN
tarafından Türkçe aslından
İngilizce/Franızca'ya çevrilmiştir.
Noteri

ANKARA 43. NOTERLİK
İmza Yetkili Katibi
Sibel YALÇIN



ANKARA 43. NOTERLİĞİ
Bahçelievler Mah. 3/1 Besevler
Tel: 212 210 2107 Çankaya - ANKARA

REPUBLIC OF TURKEY

Nº 05485

TERCÜME

Number: 05466

Date: 10.05.2022

Notary Office
in and for Ankara

STATEMENT OF SIGNATURE

10 Mayıs 2022

ANKARA 43RD NOTARY

HALIS SADIK
UNUTMAZ

TASKENT CAD. NO 3/1
BAHCELIEVLER
CANKAYA / ANKARA

TEL: +903122212207
FAX: +903122235231

I declare that I shall be using my signature the copies of which are given below, in all kinds of transactions I shall make with the official institutions and organizations within the borders of the Republic of Turkey or the relevant countries abroad, real and legal persons and banks, and that my signature shall deem me responsible in all respects, and I request the certification of my signature.

GÜNEŞ DEMİRBAŞ – 25789949722 – USA Passport No: 673704925
Andifli Mah. Demokrasi1 Cad. No: 63 / 7 Kaş / ANTALYA

SIGNATURE
(signature)

SIGNATURE
(signature)

SIGNATURE
(signature)

The signature underneath this statement which was prepared outside and brought to our notary public for approval is conducted before my presence in the notary office; belongs to GÜNEŞ DEMİRBAŞ; T.R. ID Number 25789949722, registered at Tekirdağ province, Süleymanpaşa town, Yavuz district, book no. 8, division no. 147, personal no. 38, father's name Turhan, mother's name Seçkin, date of birth 27.08.1982, place of birth Zonguldak in accordance with the photo affixed Turkish Republic identification card, given by Çankaya Civil Registration Directorate, dated 11/08/2009, registration 38287, serial R11 and numbered 419967 and declares that he is literate, and currently resides at the address stated above. (Tenth of May Two Thousand and Twenty Two, Tuesday) 10/05/2022

43rd Notary Office in and for Ankara
for and on behalf of Halis Sadık UNUTMAZ– Notary
Yusuf UYGURTAŞ – Chief Clerk
(seal and signature)

VAT, Stamp Fee and Valuable Document Fee is collected upon receipt.

YU48 A/S Page: 1 / 0 Code: 8.3.1

NBS No: 202205100060043- 4145617265

A-2 / 1 - 1

COMPLETE and ACCURATE

translation of original Turkish document

Sworn-in Translator: Özgür AYDIN

A-1[®] TERCÜME MERKEZİ
TRANSLATION CENTER

Mareşal Fevzi Çakmak Caddesi

No: 13/6 Besevler/Çankaya-ANKARA

Tel: (0312) 215 60 30 • aften@tercu.me@gmail.com

Maltepe Verel Danesi: 40667155958

İş bu belge tarafımdan Türkçe'den
İngilizce'ye aslına uygun olarak
çevrilmiştir.
Çevirmen: Özgür AYDIN

İşbu belge Noterliğimizin yeminli
çevirmeni Özgür AYDIN
tarafından Türkçe'sinden
İngilizce/Fransızca'ya çevrilmiştir.
Noter

ANKARA 43. NOTERLİĞİ
İmza Yetkili Katibe
Sibel YALÇIN



T.C.
ANKARA 43.
NOTERLİĞİ

No 05485

İMZA BEYANNAMESİ

No 05466

ANKARA 43. NOTERİ
HALİS SADIK UNUTMAZ

Türkiye Cumhuriyeti hudutları dahilindeki veya yurt dışındaki ilgili ülkelerin resmi kurum ve kuruluşları, gerçek ve tüzel kişiler ile bankalarla yapacağım her türlü işlemlerde aşağıda örnekleri bulunan imzama kullanacağımı, imzama beni her bakımdan sorumlu kılacağını beyan eder, onaylanmasını talep ederim.

GÜNEŞ DEMİRBAŞ - [REDACTED] - ABD Pasaport No: [REDACTED]
Andifli Mah. Demokrasi1 Cad. No: 63 / 7 Kaş / ANTALYA

TAŞKENT CAD. NO.3/1
BAHÇELİEVLER
ÇANKAYA / ANKARA
Tel:+903122212207
Fax:+903122235231

İMZA

İMZA

İMZA

Bu Onaylama işlem altındaki imzama gösterdiği Çankaya Nüfus Müdürlüğü'nden verilmiş 11/08/2009 tarih, 38287 kayıt, R11 seri ve 419967 numaralı fotoğraflı Nüfus Cüzdanına göre Tekirdağ ili, Süleymanpaşa ilçesi, Yavuz mahallesi/köyü, 8 cilt, 147 aile sıra, 38 sıra numaralarında nüfusa kayıtlı olup, baba adı Turhan , ana adı Seçkin , doğum tarihi [REDACTED] , doğum yeri Zonguldak olan ve halen yukarıdaki adreste bulunduğunu, okuryazar olduğunu bildiren 25789949722 T.C. kimlik numaralı GÜNEŞ DEMİRBAŞ isimli kişiye ait olduğunu noterlikte huzurumda alındığını, onaylarım. (On Mayıs ikibinyirmiki) Salı günü 10/05/2022

ANKARA 43. NOTERİ
Halis Sadık UNUTMAZYerine
İmzaya Yetkili Başkatip
Yusuf UYGURTAS

10 Mayıs 2022

ANKARA 43. NOTERLİĞİ
İmza Yetkili Katibe
Sibel YALÇINA-1® TERCÜME MERKEZİ
TRANSLATION CENTER
Mareşal Fevzi Çakmak Caddesi
No: 13/6 Beşevler/Çankaya-ANKARA
Tel: (0312) 215 60 30 • a1tercume@gmail.com
Maltepe Vergi Dairesi: 40667155958

EXHIBIT 1



Güneş Demirbaş, P.E.

Boulder, CO USA

(205) 616-4905 | gdemirbas@g-tower.com

www.g-tower.com

Profile:

Date of Birth: [REDACTED]

Residence: [REDACTED] Boulder, CO 80304

- **Professional Engineer** licensed in Colorado (license# 51331), Texas (license# 111363). Holding NCEES records (license# 64260).
- Fifteen plus years of professional experience in engineering, project management and marketing; specialized in tower portion of energy infra-structure projects.
- Worked for two reputable tower manufacturers in the industry: Valmont Industries and Mitas Energy.
- International business experience: Involved in engineering and project management of several wind energy, electric transmission line, wireless and lighting pole & tower supply projects with more than twenty utilities and contractors in five continents (North America, Europe, Asia, Africa and South America).

Education:

- **Middle East Technical University (METU):** 2007-2009
M.Sc. in Civil Engineering (Geotechnical), an ABET accredited engineering program
- **Middle East Technical University (METU):** 2001-2005
B.Sc. in Civil Engineering, an ABET accredited engineering program

Experience:

- **G-Tower, PLLC** May 2013 – Present
President and Owner

G-Tower, PLLC (www.g-tower.com) is a U.S. based support structure (tower & pole) solutions company. G-Tower provides tower engineering, inspection, procurement and project management services to the utility scale wind, small wind, offshore wind, power transmission & distribution, lighting, solar, offshore wind and wireless industries. G-Tower focuses only on the support structure portion of energy projects. After its start in May of 2013, G-Tower completed several support structure projects in five continents which are North America, Europe, Asia, South America and Africa.

- **Mitas USA** between 2011-2013
Sales & Marketing Manager

* Based in Houston, Texas

* Sales and marketing of electric transmission line steel lattice towers in the U.S.

* Business development in the U.S.

* Built sales channels in the U.S.

* Involved in developing investment plans i.e. building a new lattice tower production facility in Kaufman, TX

* Some of the projects involved are:

- Supply of 7,000 tons of steel for a 500kV S/C OHTL Project in Utah
- Supply of 1,800 tons of steel for a 345kV S/C OHTL Project in Utah
- Supply of 27,000 tons of steel for a 500kV D/C OHTL Project in Alberta, Canada
- Supply of misfabs for a 240kV D/C OHTL Project in Alberta, Canada

- **Valmont Industries** between 2009-2011

Utility Special Projects Engineer

- * Based in the headquarters of the utility division, Birmingham, Alabama.
- * Commercial and technical development of utility special projects business objectives.
- * Designed towers for tens of small wind turbines.
- * Involved in the small wind tower supply projects in Alaska, Florida, Illinois, Iowa, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New York, Ohio, Pennsylvania, Quebec, Texas, Vermont, Washington, Wisconsin.
- * Continually evaluated all manufacturing process to determine the effectiveness and safety of each operation.
- * Recommended process changes that improves their effectiveness and/or safety.
- * Interfaced with estimating to ensure the appropriate aspects of man-hour costs are being accounted for in each operation.
- * Evaluated, recommended and managed any manufacturing capital improvements needed to improve operation effectiveness and/or safety.

- **Mitas Energy** between 2006-2009
Sales & Marketing Engineer

Located at the main production campus of Mitas Energy in Ankara, Turkey. Performed the duties of sales and marketing of transmission line poles, antenna monopoles, high masts, floodlighting and lighting poles on the international market.

- **ENKA** between 2005-2006
Field Engineer

Worked in Kazakhstan at the construction of artificial islands, offshore Caspian Sea as part of the Kashagan Development Project. The duties of field engineer included site supervision, progress reporting, and HSE overseeing. The owner of the project was AGIP-KCO, Eni Group. ENKA is ranked as one of the top 100 contractors in the world.

Professional Development:

- Visitor at AWEA Wind Power in Houston, TX in May 2019.
- Visitor at AWEA Wind Power in Chicago, IL in May 2018.
- Member of DWEA (Distributed Wind Energy Association). Sustainable manufacturing, advanced research and technology (SMART) wind consortium, support structures subgroup participant.
- Exhibitor at the ASCE/SEI Electrical Transmission & Substation Structures Conference in Branson, MO in September 2015.
- **Speaker** and Exhibitor at the Small Wind Conference in Stevens Point, WI in Jun 2014.
- Exhibitor at the Small Wind Conference in Stevens Point, WI in Jun 2013.
- Visitor at the Power Engineers Power Delivery Conference in Sun Valley, ID in Mar 2013.
- Exhibitor at the ASCE Electric Transmission Structure Conference in Columbus, OH in Nov 2012.
- Exhibitor at the IEEE-PES Transmission & Distribution Conference in Orlando, FL in May 2012.
- Visitor at the Power Engineers Power Delivery Conference in Sun Valley, ID in Mar 2012.
- Exhibitor at the AWEA Small Wind Exhibition in Des Moines, IA in Sep 2011.
- **Speaker** and Exhibitor at the Small Wind Conference in Stevens Point, WI in Jun 2011.
- Exhibitor at the AWEA Wind Exhibition in Anaheim, CA in May 2011.
- Exhibitor at the AWEA Small Wind Exhibition in Portland, OR in Dec 2010.
- Exhibitor at the Small Wind Conference in Stevens Point, WI in Jun 2010.
- Exhibitor at the AWEA Wind Exhibition in Dallas, TX in May 2010.
- **Speaker** at the National Renewable Energy Association (NREL) US Midsize Wind Turbine Conference in Broken Arrow, OK in Apr 2010.
- **Speaker** at the National Renewable Energy Association (NREL) US Midsize Wind Turbine Conference in Cincinnati, OH in Mar 2010.
- Exhibitor at the American Wind Energy Association (AWEA) Small Wind Exhibition in Detroit, MI in Nov 2009.
- Exhibitor at the Hannover Messe 2008 in Germany.

References provided upon request.

EXHIBIT 2



G-TOWER TRANSMISSION LINE KEY PROJECTS

1. KUOPIO 110 kV T-LINE ARRANGEMENTS PROJECT (2022 - ONGOING)

Client is Fingrid.

Transmission line and substation structures.

- Prototype inspection of towers.
- Manufacturing inspection of towers.

2. NEW TRANSMISSION LINE DESIGN PROJECT (2022 - ONGOING)

Client is Confidential.

Approx.. 90miles long 345kV DC transmission line design in Colorado.

- Preliminary design of line.
- Plan & Profile drawings preparation.
- Informed decision on route options.
- Cost estimates.

3. CENTELLA SUBSTATION EXPANSION PROJECT (2022 - ONGOING)

Client is Ferrovial.

6 Substation structures in Santiago, Chile.

- Prototype inspection of towers.
- Manufacturing inspection of towers.

4. CENTELLA TRANSMISSION LINE PROJECT (2020-2022)

Client is Ferrovial.

250km Long 220 kV Double Circuit Transmission Line in Santiago, Chile.

- Prototype inspection of towers.
- Manufacturing inspection of towers.

5. EAST-WEST TIE TRANSMISSION LINE PROJECT (2019-2020)

Client is NextBridge (JV between Nextera and Enbridge).

480km Long 230kV Double Circuit Transmission Line (to be built in 2021-22) in Northern Ontario, Canada.

- Owner's engineer for the lattice tower design development and inspection portion of the transmission line project.
- Engineering review and approval of all 10 lattice tower types.
- Manufacturing inspection of 20000 metric tons of lattice tower steel in the tower manufacturing plant in Turkey.

6. SAMSON & DELILAH 345kV TRANSMISSION LINE PROJECT (2020)

Client is RES Americas.

45km Long 345kV Double Circuit Transmission Line (to be built in 2021) in Texas.



- Engineering and detailing of lattice towers (2 types).
- Project coordination for the supply portion of lattice towers.
- Prototype inspection of towers.
- Manufacturing inspection of towers.

7. WATAYNIKANEYAP POWER PHASE-1 PROJECT (2017-2020)

Client is Wataynikaneyap Power, a Fortis Ontario Company and RES Americas.

300km Long 230kV Single Circuit Transmission Line (to be built in 2020-2021) in Northern Ontario, Canada.

- Owner's engineer at the development and tendering stages of the project.
- Transmission Line Project Engineering Services.
- Preparation of 30% P&Ps for LTC purposes.
- Project management of lidar acquisition and Poly-Geo geomorphological analysis.
- Supporting upper management on the technical portion of the EPC tender process.

8. WATAYNIKANEYAP POWER PHASE-2 PROJECT (2017-2020)

Client is Wataynikaneyap Power, a Fortis Ontario Company and RES Americas.

1400km Long 115/44kV Single Circuit Transmission Line and 25kV Distribution Line (to be built in 2020-2024) in Northern Ontario, Canada.

- Owner's engineer at the development and tendering stages of the project.
- Transmission Line Project Engineering Services.
- Engineering review of transmission line design work.
- Project management of lidar acquisition and Poly-Geo geomorphological analysis.
- Supporting upper management on the technical portion of the EPC tender process.

9. PIKANGIKUM TRANSMISSION LINE PROJECT (2017-2018)

Client is Wataynikaneyap Power, a Fortis Ontario Company and RES Americas.

100km Long 115/44kV Single Circuit Transmission Line and 20km long 25kV Distribution Line in Northern Ontario, Canada.

- Owner's engineer at the development, design, tendering and construction stages of the project.
- Transmission Line Project Engineering Services.
- Engineering review of transmission line design and substation design work.
- Project management of lidar acquisition and geotechnical work.
- Supported upper management on the technical portion of the EPC tender process.

10. RIO ESCONDIDO TRANSMISSION LINE PROJECT (2019-2020)

Client is a Chilean EPC Contractor (Confidential).

50km Long 220kV Transmission Line (to be built in 2021) in Northern Chile.

- Prototype inspection of 6 lattice tower types in the tower manufacturing plant in Turkey.
- Manufacturing inspection of 1000 metric tons of lattice tower steel in the tower manufacturing plant in Turkey.

11. PERSIMMON CREEK WIND FARM GEN-TIE PROJECT (2018)

Client is Origin in Colorado.

4 miles Long 345kV Single Circuit Transmission Line in Oklahoma.

- Transmission line design review.



- Review of IFC level P&Ps.

12. 500KV DOUBLE CIRCUIT HVDC TRANSMISSION LINE PROJECT IN ALBERTA, CANADA (2013-14)

Project owner is Alberta Transmission Company.

Client is Mitas Industry out of Ankara, Turkey.

- Supporting the supply of 27000 metric ton hot dip galvanized lattice tower from Turkey to Alberta.
- Manufacturing of misfabs and miscellaneous parts locally in Texas and supply to Alberta.

13. 345KV SINGLE CIRCUIT ENERGY GATEWAY RED BUTTE TO SIGURD TRANSMISSION LINE PROJECT IN UTAH (2013)

Project owner is PacifiCorp.

Client is Mitas Industry out of Ankara, Turkey.

- Supporting the supply of 1800 metric ton hot dip galvanized lattice tower from Turkey to Utah.
- Manufacturing of misfabs and miscellaneous parts locally in Texas and supply to Utah.

EXHIBIT 3



Date Submitted: 2022-05-12

Project No: 220014

Revision No: 0

Prepared By: Gunes Demirbas, P.E.

1. INTRODUCTION

G-Tower PLLC has been retained by the property owners, Frank Brown and Martha Brown through their representative Allen Summers to present this testimony. The purpose of this report is to present the engineering review findings on alternative routes at or near the vicinity of APN (207-00-00-010 and 190-30-00-020). Our report is based on the documents available and listed under section “1.1 References” of this document.

1.1 REFERENCES:

1. Response to Frank D. Brown and Martha V. Brown’s Initial Request for Information, dated April 14, 2022. Case No. 2022-00066
2. Response to Frank D. Brown and Martha V. Brown’s Supplemental Request for Information, dated April 29, 2022. Case No. 2022-00066
3. BrownFarmKULineAlternatives-B
4. BrownFarmKULineAlternatives-C
5. BrownFarmKULineAlternatives-D
6. BrownFarmKULineAlternatives-E
7. Response of Kentucky Utilities Company to Commission Staff’s First Request for Information, dated April 1, 2022, Case No. 2022-00066. Pg. 13 of 36, Pg. 14 of 36, Pg. 23 of 36 and Pg. 24 of 36.

1.2 DEFINITIONS:

1. Tangent Towers/Structures: Where the conductors are continuing a straight line, the tower constructed along this section is called a tangent tower. Tangent towers are lightweight towers, therefore the least expensive. Tangent towers are approximately 80% of the entire structure quantity of a transmission line.
2. Running Angle Towers/Structures: Where the conductors are changing direction due to requirements, which have a light (0-15°) to medium (15-30°) angle. Running Angle towers are medium-weight towers, therefore the mid-range cost. Generally, Running Angle towers are approximately 10-15% of the entire structure quantity of a transmission line.
3. Dead-End Structures: Where a transmission line ends; where the transmission line turns at a large angle; on each side of a major crossing such as a large river, highway, or large valley; or at intervals along straight segments to provide additional support, the tower constructed at this location is called a dead-end tower. Dead-end towers are the heaviest and therefore the most expensive structures in a transmission line. Generally, Dead-end towers are approximately 5-7% of the entire structure quantity of a transmission line.
4. A-Frame: These structures are the connection between the dead-end towers and the substation structures. Conductors connect to these structures and are then distributed to subsequent structures and/or equipment within the substation area.



Date Submitted: 2022-05-12

Project No: 220014

Revision No: 0

Prepared By: Gunes Demirbas, P.E.

2. REVIEW

2.1. REVIEW OF GLENDALE ROUTING MAP – REFERENCE #7 – KU PROPOSED ROUTE:

- The proposed 345 kV substation is located within the property of Hardin County, KY. Consists of one (1) 345 kV Single Circuit West, one (1) 345 kV Single Circuit East, one (1) 138 kV Circuit East and one (1) 138 kV Circuit West Transmission Lines.
- 345 kV Circuit West Transmission line is centered in the allowed 1000 ft corridor.
- 345 kV Circuit West Transmission line terminates at the Glendale South Substation.
- Each white square depicts a “proposed structure location” on the routing map. Based on the data on maps,
 - one (1) running-angle structure and one (1) tangent structure on the west side of the property with APN 207-00-00-010
 - two (2) tangent structures are located within the property with APN 190-30-00-020.
- Total length of transmission line between above noted are 4 towers are approximately 2230 feet.
- Based on spotting between 345 kV Line structures in the area, the ruling span is approximately 800ft.

2.2. REVIEW OF BROWN FARM KU LINE ALTERNATIVES-B – REFERENCE #3:

Based on our desk review;

- This alternative route will require an additional 1 tangent structure and 1 running angle structure and 2 dead-end structures.
- The alternative route is approximately 1300 feet longer than the originally proposed line submitted by KU Proposed line.
- Based on the above additional tower, conductor, and hardware requirements we estimate that this alternate route will increase the overall project cost by approximately \$1,100,000.

2.3. REVIEW OF BROWN FARM KU LINE ALTERNATIVES-C – REFERENCE #4:

Based on our desk review;

- This alternative route will not require any additional structures.
- Termination dead-end tower on the North side of the Glendale South substation will be moved towards the West by approximately 250feet.
- Re-spotting of 2 towers and a slight change of the angle of the proposed line will allow the alternate to stay within the corridor.
- The alternative route is approximately 200 feet shorter than the originally proposed line submitted by KU Proposed line.
- Based on the aforementioned, we estimate that this alternate route will save approximately \$50,000 in overall project cost.



Date Submitted: 2022-05-12

Project No: 220014

Revision No: 0

Prepared By: Gunes Demirbas, P.E.

2.4. REVIEW OF BROWN FARM KU LINE ALTERNATIVES-D – REFERENCE #5:

Based on our desk review;

- This alternative route will require an additional 1 tangent structure and 1 dead-end structure.
- The alternative route is approximately 450 feet longer than the originally proposed line submitted by KU Proposed line.
- Based on the above additional tower, conductor, and hardware requirements we estimate that this alternate route will increase the overall project cost by approximately \$175,000. Please note that this alternative is not complete and cannot be fully assessed.

2.5. REVIEW OF BROWN FARM KU LINE ALTERNATIVES-E – REFERENCE #4:

Based on our desk review;

- This alternative route will require an additional 8 tangent structures and 3 dead-end structures.
- The alternative route is approximately 5900 feet longer than the originally proposed line submitted by KU Proposed line.
- Connection to KU proposed line is not shown on the map therefore we are not sure about the complete extent and its effect on the overall line cost.
- Based on the above additional tower, conductor, and hardware requirements we estimate that this alternate route will increase the overall project cost by approximately \$1,575,000.

2.6. DISCLAIMER:

Our feasibility study is based on the data available and assumes that the geotechnical parameters do not change drastically between the proposed alternative routes and the originally submitted lines.

Our cost estimates are based on our previous experience and may not be accurate for this project. We recommend that a $\pm 50\%$ contingency be estimated and included in the final estimate.

3. CONCLUSION & RECOMMENDATIONS

We have studied the aforementioned alternatives and the Q&A between Brown Family and KU.

From a transmission line engineering point of view Alternate B is one of the available route options but will likely cost more to the Owner based on the following reasons: a) the Alternate B line will be longer than the actual proposed line. Considering the overall length of the line, Alternate B will cause a large increase in the overall project cost. b) the line will have more angle changes and consequently require heavier towers and larger foundation work.

Alternate D and Alternate E will require the construction of the two lines in close proximity to each other and are far more likely to be affected by an event (i.e., a weather event, fallen tree etc.) which may cause a simultaneous interruption of multiple lines. Running two or more lines



Date Submitted: 2022-05-12

Project No: 220014

Revision No: 0

Prepared By: Gunes Demirbas, P.E.

in parallel will need a wider easement, consequently, these alternatives are less favorable to landowners and the line owner.

Considering that the proposed transmission line is at its preliminary design stage, the line design and substation design are not finalized and are open to revisions. That said, for Alternative C, from a structural engineering point of view, we don't see any issues with moving the proposed line towards the west of Brown's property line. If a re-spotting is done (refer to Figure 1), and the angle of the line is moved towards the Northwest corner of APN 190-00-30-020, Alternative C would neither increase the structure count nor requires additional conductor length, therefore it is feasible to consider the relocation as proposed. Even though the towers are moved towards the property line on the west side, the line will remain within the proposed corridor and the connection point to Glendale South Substation will not substantially change. We don't anticipate any additional cost shall be incurred by this revision.

Every transmission line construction will have geotechnical uncertainties at its preliminary stage. We also note that the use of deep foundations will be required for the electric line structures within the right-of-way, due to the presence of underground facilities and other restrictions, however, a detailed geotechnical study hasn't been carried out, therefore, this should not be a concern or restraint at this time. Based on our review Alternative C is not far away from the original proposed (refer to Figure 1) line. The geotechnical conditions will not have a significant difference between Alternative C and the Proposed KU Lines, therefore below ground karst formation is a condition to be considered in foundation design for both.

Considering the future social and commercial impact of the proposed KU transmission line and not having the engineering and geotechnical studies completed at this time, we believe that the transmission line can be moved as per Alternative C (refer to Figure 1) – towards the West Property lines of APN 190-00-30-020 and APN 207-00-00-010, with no or minimal cost to the Owner.

If you have any questions regarding this report, please do not hesitate to contact our office.

Sincerely,
G-Tower, PLLC
Gunes Demirbas, P.E.

A handwritten signature in black ink, appearing to read "Gunes Demirbas".

4. APPENDIX

Figure 1:

