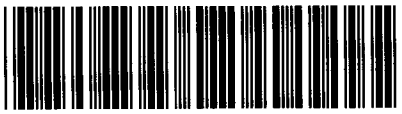

Control Number: 43599

Item Number: 2

Addendum StartPage: 0

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE PROPOSED BLUMENTHAL SUBSTATION AND 138-KV TRANSMISSION LINE PROJECT IN BLANCO, GILLESPIE, AND KENDALL COUNTIES, TEXAS

DOCKET NO. 43599

Submit seven (7) copies of the application and all attachments supporting the application. If the application is being filed pursuant to P.U.C. SUBST. R. 25.101(b)(3)(D) or P.U.C. Subst. R. 25.174, include in the application all direct testimony. The application and other necessary documents shall be submitted to:

Public Utility Commission of Texas
Attn: Filing Clerk
1701 N. Congress Ave.
Austin, Texas 78711-3326

2

Note: As used herein, the term "joint application" refers to an application for proposed transmission facilities for which ownership will be divided. All applications for such facilities should be filed jointly by the proposed owners of the facilities.

1. **Applicant (Utility) Name:** LCRA Transmission Services Corporation (LCRA TSC)

Certificate Number:	30110
Street Address:	3700 Lake Austin Boulevard Austin, TX 78703
Mailing Address:	P.O. Box 220 Austin, TX 78767-0220

2. **Please identify all entities that will hold an ownership interest or an investment interest in the proposed project but which are not subject to the Commission's jurisdiction.**

LCRA TSC will hold the sole ownership interest in the proposed project. No other entities besides LCRA TSC will hold an ownership or investment interest in the proposed project. LCRA TSC is subject to the Commission's jurisdiction.

3.

Person to Contact:	Lance Wenmohs
Title/Position:	Manager, Siting & Certification
Phone Number:	(512) 578-4495
Mailing Address:	P.O. Box 220 Mail Stop DSC D204 Austin, TX 78767-0220
Email Address:	lance.wenmohs@lcra.org
Alternate Contact:	Christian Powell
Title/Position:	Sr. Regulatory Case Manager
Phone Number:	(512) 578-4454
Mailing Address:	P.O. Box 220 Mail Stop DSC D204 Austin, TX 78767-0220
Email Address:	christian.powell@lcra.org

Legal Counsel:	Fernando Rodriguez
Phone Number:	(512) 473-3354
Mailing Address:	Legal Department
	3700 Lake Austin Boulevard
	Austin, TX 78703
Email Address:	ferdie.rodriguez@lcra.org

4. Project Description:

Name or Designation of Project

Blumenthal[1] Substation and 138-kV Transmission Line Project in Blanco, Gillespie, and Kendall Counties, Texas.

Provide a general description of the project, including the design voltage rating (kV), the operating voltage (kV), the CREZ Zone(s) (if any) where the project is located (all or in part), any substations and/or substation reactive compensation constructed as part of the project, and any series elements such as sectionalizing switching devices, series line compensation, etc. For HVDC transmission lines, the converter stations should be considered to be project components and should be addressed in the project description.

If the project will be owned by more than one party, briefly explain the ownership arrangements between the parties and provide a description of the portion(s) that will be owned by each party. Provide a description of the responsibilities of each party for implementing the project (design, Right-Of-Way acquisition, material procurement, construction, etc.).

If applicable, identify and explain any deviation in transmission project components from the original transmission specifications as previously approved by the Commission or recommended by a PURA §39.151 organization.

General Description of Project

LCRA TSC proposes to design and construct a new single-circuit 138-kilovolt (kV) transmission line in Gillespie County and a portion of western Blanco County or northern Kendall County, depending on the final route. The design voltage rating for this project is 138-kV, and the operating voltage is also 138 kV. This new transmission line will connect a planned Central Texas Electric Cooperative (CTEC) electric substation located in the Blumenthal area of eastern Gillespie County (near the intersection of US Highway 290 and Luckenbach Road or the intersection of US Highway 290 and Jenschke Lane) to LCRA TSC's existing Kendall to Mountain Top 138-kV transmission line (T342)

[1] For purposes of this CCN application and all supporting documents, Central Texas Electric Cooperative's (CTEC) proposed new substation is called "Blumenthal". CTEC may choose a different name for the new substation at a later date.

traversing northern Kendall and western Blanco counties. The entire project will be approximately 10 to 17 miles in length, depending on the final route selected. LCRA TSC will install new equipment at both the new CTEC Blumenthal Substation and at the tap point to be located along LCRA TSC's existing Kendall to Mountain Top 138-kV transmission line (T342).

Please see Figure 2-1 in the *Environmental Assessment and Alternative Route Analysis* (EA), incorporated herein by reference for all purposes and included as Attachment 1 to this application, which shows the general location of the project end points.

Ownership Arrangements
LCRA TSC will own, operate, and maintain all transmission line facilities including conductors, wires, structures, hardware, and easements. LCRA TSC will acquire the property (approx. two acres) and own, operate, and maintain all facilities associated with the tap point site (switching substation) where the new 138-kV transmission line will "tap" or connect to LCRA TSC's existing Kendall to Mountain Top 138-kV transmission line (T342). CTEC will acquire the property (approx. three acres), design, build, and own the new Blumenthal Substation. LCRA TSC will design and build certain facilities at the Blumenthal Substation into which it will terminate its transmission line.

5. **Conductor and Structures:**

Conductor Size and Type:	336.4 Kcmil 26/7 ACSR "Linnet"
Number of conductors per phase:	One (1) conductor per phase
Continuous Summer Static Current Rating (A):	535 A
Continuous Summer Static Line Capacity at Operating Voltage (MVA):	127 MVA
Continuous Summer Static Line Capacity at Design Voltage (MVA):	127 MVA

Type and Composition of Structures:

The typical tangent, angle, and dead-end structure types proposed by LCRA TSC for this project are steel and/or concrete single pole structures. If ordered otherwise by the Commission, or in constrained areas such as, but not limited to, line crossings and in proximity to airports or air flight navigation facilities, LCRA

TSC could use alternative structure types including H-frames and lattice towers.

Height of Typical Structures: The typical heights of all pole structures range from 65 feet to 130 feet above ground line.

Explain why these structures were selected; include such factors as landowner preference, engineering considerations, and costs comparisons to alternate structures that were considered. Provide dimensional drawings of the typical structures to be used in the project.

For joint applications, provide and separately identify the above-required information regarding structures for the portion(s) of the project owned by each applicant.

LCRA TSC considered and evaluated single pole, H-frame, and lattice tower type structures for this project. For each alternative structure type, the following factors were considered:

- Public input
- Cost
- Nominal distance between structures (i.e., span length)
- Right-of-way (ROW) requirements
- Potential land use impacts
- Potential environmental impacts
- Engineering constraints
- Construction and maintenance issues
- Schedule

LCRA TSC obtained input from the public at and following the open house meeting held on May 15, 2014. This was done through informal, one-on-one conversations between LCRA staff and the public and through the project questionnaire. Members of the public and interested persons were able to view drawings and photo simulations of the typical 138-kV structure options at the open house meeting and/or on LCRA's website and were able to indicate their preferred structure type on the project questionnaire. Questionnaire respondents indicated a strong preference for the single pole structure type.

Using input from LCRA staff with expertise in different disciplines including environmental, real estate, and construction, LCRA engineers estimated the cost for each segment and node for each alternative structure type and determined that single pole structures are the least cost alternative.

Based on this evaluation, LCRA engineers selected single pole structures as the preferred structure type for this project. The determination of material type (concrete or steel) will be made during the detailed design phase of the project, considering factors such as terrain, cost, schedule and other factors. For a detailed discussion of the typical structures and their requirements please refer to Section 1.4 of the EA.

For some route segments (potentially, but not limited to, Segment Q1, S, T, U and V) located near the Federal Aviation Administration (FAA) Stonewall VHF Omnidirectional Range/Tactical Aid to Navigation (VORTAC) ground based air navigation aid, LCRA TSC recommends constructing the line with horizontal configuration steel or concrete H-frame structures. Using the shorter profile H-frame structures along portions of these segments will avoid potential interference with the FAA communication beacon.

Please refer to Figures 1-2 through 1-5 in the EA for drawings of the typical steel or concrete pole structures proposed for this project. Also refer to EA Figures 1-6 through 1-10 for drawings of alternative structure types, including steel or concrete H-frame structures and steel lattice tower structures.

6. **Right-of-way:**

Miles of Right-of-Way:	Approximately 10.4 to 17 miles
Miles of Circuit:	Approximately 10.4 to 17 miles
Width of Right-of-Way:	ROW will vary from an estimated minimum ROW width of 80 feet to an estimated maximum ROW width of 130 feet in long spans. The typical ROW width is estimated to be between 80 and 100 feet.
Percent of Right-of-Way Acquired:	0%

For joint applications, provide and separately identify the above-required information for each route for the portion(s) of the project owned by each applicant.

Not applicable. This is not a joint application.

Provide a brief description of the area traversed by the transmission line. Include a description of the general land uses in the area and the type of terrain crossed by the line.

The new transmission line will connect the new CTEC Blumenthal Substation to a tap point on LCRA TSC's existing Kendall to Mountain Top 138-kV electric transmission line (T342). The proposed project area is located within Blanco, Gillespie and Kendall counties, Texas and includes portions of some small unincorporated communities. These communities include: Blumenthal, Stonewall, Albert, Lindendale and Luckenbach.

Land uses within the project area include scattered residential areas and agricultural areas represented by pastureland, rangeland and cropland. Project area pastures and rangeland are used to support cattle, goats, sheep, horses, wildlife operations and/or the production of hay. The primary crops grown within the project area include hay, corn, sorghum, wheat, oats, grapes, peaches, and pecans.

The project area is situated within the Edwards Plateau physiographic region of Texas. The northeastern portion of the study area is located within the Central Texas Uplift physiographic region. The region's topography is described as gently rolling hills. Elevations in the Edwards Plateau increase southward and eastward and range from approximately 450-3,000 feet above mean sea level. Elevations in the Central Texas Uplift range from approximately 800-2,000 feet above mean sea level. Elevations in the study area range between 1,400 feet along the Pedernales River to 1,900 feet above mean sea level in the hills of the southern portion of the study area.

Specific discussion regarding natural, human, and cultural resources in the project area is set forth in the EA, Section 2.0, pages 2-1 through 2-66.

7. **Substations or Switching Stations:**
List the name of all existing HVDC converter stations, substations or switching stations that will be associated with the new transmission line. Provide documentation showing that the owner(s) of the existing HVDC converter stations, substations and/or switching stations have agreed to the installation of the required project facilities.

The existing LCRA TSC Kendall to Mountain Top 138-kV transmission line (T342) and the new CTEC Blumenthal Substation will serve as termination points for this transmission line project.

LCRA TSC will construct a tap point (switching substation) where the new line will connect with the existing Kendall to Mountain Top transmission line (T342). The following will be located at the tap point site: three substation A-frame structures, three 138-kV motor operated switches with interrupters, a 138-kV operating bus, a power

voltage transformer, a control house, a motor-operated switch panel, and a remote terminal unit. LCRA TSC will acquire the property (approx. two acres) to accommodate the tap point site.

The new Blumenthal Substation will be an alternating current (AC) transmission substation owned by CTEC and will include facilities owned and/or operated by LCRA TSC and CTEC. CTEC will acquire the property (approx. three acres), and will design, construct, operate, own and maintain the Blumenthal Substation. The LCRA TSC facilities to be located at the Blumenthal Substation will include a substation A-frame structure, a motor operated switch with interrupters, a 138-kV operating bus, a motor-operated switch panel, and a remote terminal unit. The CTEC facilities will include two 138-kV disconnect switches, a power transformer, circuit switcher, low voltage distribution bays, and a control house. There are no HVDC converter stations associated with this transmission line project.

A letter of support for the project was received from CTEC on February 13, 2013. The letter is provided as Attachment 2.

8. Estimated Schedule:

Estimated Dates of:	Start	Completion
Right-of-way and Land Acquisition	November 2015	June 2017
Engineering and Design	April 2016	August 2017
Material and Equipment Procurement	June 2016	August 2017
Construction of Facilities	December 2016	June 2018
Energize Facilities	June 2018	June 2018

9. Counties:

For each route, list all counties in which the route is to be constructed.

Portions of all alternative routes are to be constructed in Gillespie County, Texas because the northern termination point of the project (i.e., the Blumenthal Substation) is located in Gillespie County.

The following alternate routes will be constructed in Gillespie and Blanco Counties: Routes 2, 6, 8, 10, 12, 14, 16, and 18.

The following alternate routes will be constructed in Gillespie and Kendall Counties: Routes 1, 3, 4, 5, 7, 9, 11, 13, 15, 17, 19, and 20.

Please refer to figures 4-7, 4-8 and 5-1 in the EA for the location of alternative route segments in relation to county boundaries.

10. Municipalities:

For each route, list all municipalities in which the route is to be constructed.

No portion of any route will be constructed within the city limits of an incorporated municipality.

For each applicant, attach a copy of the franchise, permit or other evidence of the city's consent held by the utility, if necessary or applicable. If franchise, permit, or other evidence of the city's consent has been previously filed, provide only the docket number of the application in which the consent was filed. Each applicant should provide this information only for the portion(s) of the project which will be owned by the applicant.

Authority to provide transmission service is contained in, among other dockets, Docket Nos. 17, 19, and 24419.

11. Affected Utilities:

Identify any other electric utility served by or connected to facilities in this application.

Central Texas Electric Cooperative (CTEC) will be connected to and/or served by facilities in this application. CTEC will serve retail electric distribution load out of its new Blumenthal Substation, which is the termination point of the proposed 138-kV electric transmission line.

Describe how any other electric utility will be affected and the extent of the other utilities' involvement in the construction of this project. Include any other electric utilities whose existing facilities will be utilized for the project (vacant circuit positions, ROW, substation sites and/or equipment, etc.) and provide documentation showing that the owner(s) of the existing facilities have agreed to the installation of the required project facilities.

LCRA TSC will build and own the transmission project (i.e., the 138-kV transmission line). The transmission line will connect the new CTEC Blumenthal Substation to LCRA TSC's existing Kendall to Mountain Top 138-kV electric transmission line (T342) as described in response to Questions 4 and 7 above. CTEC will build, own, and operate the new Blumenthal Substation. LCRA TSC will add structures and equipment at the tap point where the new line will connect with T342 as well as at CTEC's new Blumenthal Substation.

The proposed transmission lines may also cross existing electric distribution lines owned by CTEC and Pedernales Electric Cooperative (PEC).

LCRA TSC will coordinate with CTEC to obtain adequate space in the proposed new Blumenthal Substation to terminate this transmission line. A letter of support for the project was sent from CTEC to LCRA TSC on February 13, 2013. The letter is provided as Attachment 2.

12. **Financing:**
Describe the method of financing this project. For each applicant that is to be reimbursed for all or a portion of this project, identify the source and amount of the reimbursement (actual amount if known, estimated amount otherwise) and the portion(s) of the project for which the reimbursement will be made.

LCRA TSC will finance the facilities included in this Application in a manner similar to that which has been used for projects previously constructed by LCRA TSC. That is, it will be financed initially with a combination of tax-exempt commercial paper, tax-exempt private revolving note, and fixed-rate debt. Interest on the debt may be capitalized until the project is in service, at which point it is intended that both the principal and interest will be serviced with Transmission Cost of Service revenues.

LCRA TSC is the sole applicant, and, therefore, no other party will be reimbursed for any portion of the project.

13. **Estimated Costs: Provide cost estimates for each route of the proposed project using the following table. Provide a breakdown of "Other" costs by major cost category and amount. Provide the information for each route in an attachment to this application.**

	Transmission Facilities *	**Substation Facilities ***
Right-of-way and Land Acquisition		
Engineering and Design (Utility)		
Engineering and Design (Contract)		
Procurement of Material and Equipment (including stores)		
Construction of Facilities (Utility)		
Construction of Facilities (Contract)		

Other (all costs not included in the above categories)		
Estimated Total Cost	See Attach. 3	See Attach. 3

*Please refer to Attachment 3 for Transmission and Substation Facilities estimated costs for each alternative route presented in this application.

The estimated costs for the new 138-kV electric transmission line and the tap point facilities to be located at T342 were developed by LCRA TSC. The estimated costs for the new Blumenthal Substation were provided by CTEC. LCRA TSC added some estimated costs to the CTEC substation cost estimates for its facilities to be located at the new substation.

14. Need for the Proposed Project:

For a standard application, describe the need for the construction and state how the proposed project will address the need. Describe the existing transmission system and conditions addressed by this application. For projects that are planned to accommodate load growth, provide historical load data and load projections for at least five years. For projects to accommodate load growth or to address reliability issues, provide a description of the steady state load flow analysis that justifies the project. For interconnection projects, provide any documentation from a transmission service customer, generator, transmission service provider, or other entity to establish that the proposed facilities are needed. For projects related to a Competitive Renewable Energy Zone, the foregoing requirements are not necessary; the applicant need only provide a specific reference to the pertinent portion(s) of an appropriate commission order specifying that the facilities are needed. For all projects, provide any documentation of the review and recommendation of a PURA §39.151 organization.

A. Description of the existing electric system in the Proposed Project area

LCRA TSC provides 138-kV and 69-kV transmission service to CTEC at a total of 23 substations, including nine substations that are located in Gillespie County (Goehmann Lane, Gillespie, Hollmig, Nimitz, Live Oak, Eckert, Nebo, Harper, and Doss substations). Attachment 4 provided in response to question 16 of this application illustrates the general location of the LCRA TSC and CTEC transmission lines and substations located in Gillespie County.

CTEC's transmission facilities in the Gillespie County area are load-serving, mostly radially-supplied, operated at 69-kV, and are provided 138-kV support through the LCRA TSC Fredericksburg and Gillespie 138/69-kV substations as shown in Figure 1 below.

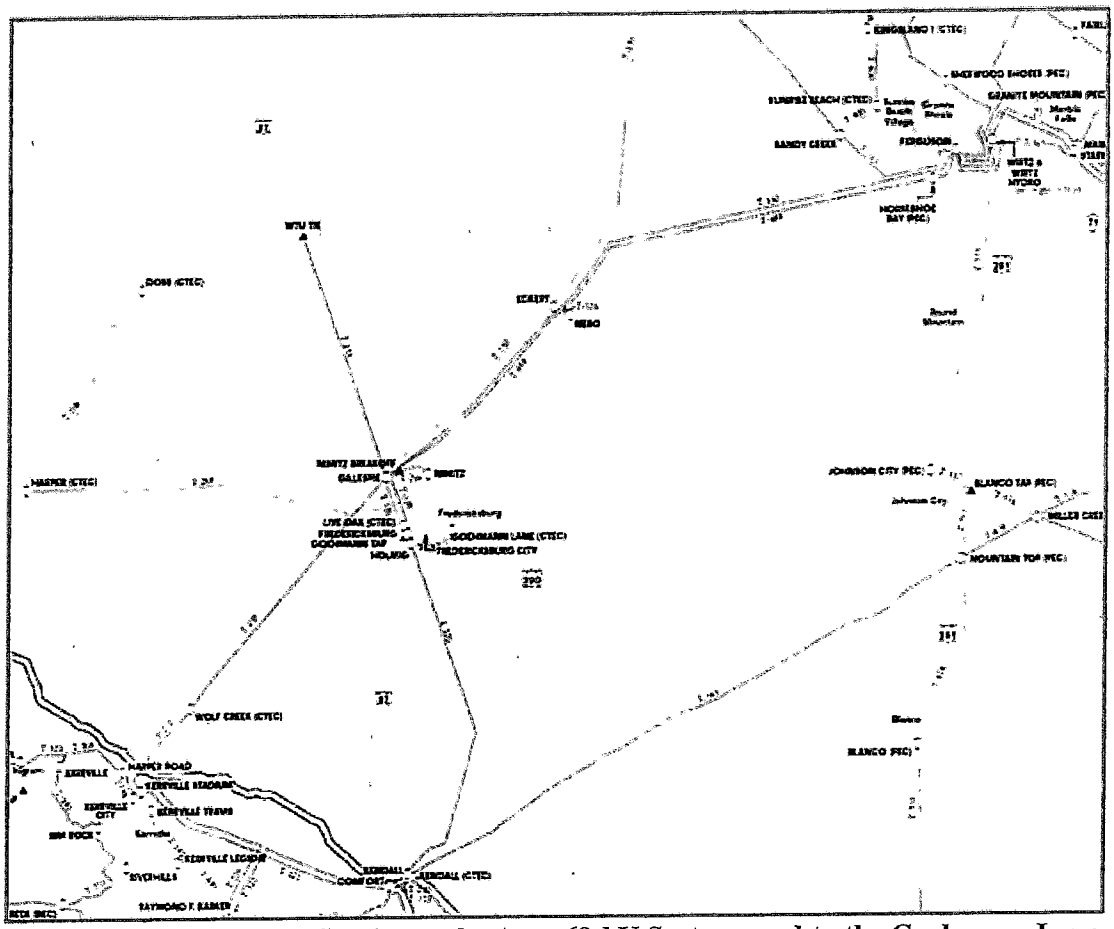

Figure 1 – Transmission Service to the Area 69-kV Systems and to the Goehmann Lane Substation

The Goehmann Lane Substation, one of the nine substations located in Gillespie County, is located on the northeast side of the City of Fredericksburg. The Goehmann Lane Substation serves a broad area covering parts of three counties including one small city and six area communities east of Fredericksburg. Regarding transmission service, the Goehmann Lane Substation is entirely dependent upon a 4.6-mile single-circuit 69-kV transmission line tap on the transmission line connecting the Live Oak and Fredericksburg substations as shown in the transmission system map provided as Figure 1 above. In terms of electric load-serving capability, the Goehmann Lane Substation is currently equipped with two CTEC-owned power transformers with a combined capacity rating of approximately 38 Megawatts (MW) that serves the area's electric load.

In terms of distribution facilities, CTEC currently owns and operates five low voltage distribution circuits originating in the Goehmann Lane Substation. These five distribution circuits are used to serve electric load in the area.

Presently, based on Summer 2014 peak load conditions, approximately 34 percent of the CTEC electric load served by the nine substations located in Gillespie County is served from the Goehmann Lane Substation. This electric load consists of service to end-use, retail consumers such as residential, small and large commercial, emergency response, churches and schools, ranch and farm operations, bed and breakfast/RV camps, communications towers and systems, water treatment plants and a growing number of local area small businesses. The combined Summer 2014 CTEC electric load served at the nine substations located in Gillespie County reached 49 MW. In terms of the number of meters served by the Goehmann Lane Substation, CTEC added 1,584 meters over a 12-year period with an annual growth rate of 7.64 percent which is three times the overall CTEC system meter growth rate. This growth in load currently served from the Goehmann Lane Substation is anticipated to continue.

B. Description of the need for the Proposed Project

The Proposed Project is needed to provide 138-kV transmission service to a new electric load-serving substation (the Blumenthal Substation). The Blumenthal Substation is needed to ensure that the electric service requirements of existing and future end-use consumers in a broad area are met in a reliable, efficient, and cost-effective manner. The area's historical and projected high electric load growth coupled with its general location and limited electric delivery and transmission system results in reliability deficiencies that must be addressed in a timely manner. Specifically, the need for the new substation and related new high voltage transmission line is driven by electric load growth that is:

- Located over a broad area spanning portions of three counties;
- Located generally east and southeast of the City of Fredericksburg and remote from the nearest available transmission source (i.e., the Goehmann Lane Substation);
- Anticipated to exceed the area's distribution system capacity and reliability standards as measured by local, state, and national standards (addressed in more detail below);
- Radially-supplied by a 69-kV transmission line; and,
- Connected as part of a broader 69-kV system that has limited 138-kV support, which leaves the electric system unable to reliably support the projected area electric load under single contingency conditions.

Area Electric Load Growth and Distribution System

As described above, the electric service needs of end-use consumers in large areas of eastern and southeastern Gillespie County, western Blanco County, and northern Kendall County are served by CTEC out of the Goehmann Lane Substation. The electric load in this area has been growing at a high rate over the last few years and coupled with the existing need for electric service in the area of eastern and southeastern Gillespie County and the remoteness to the Goehmann Lane Substation, the present electric system's

capability to reliably and adequately serve the electric load will be exceeded in the very near future.

The electric load in this area grew approximately 107 percent between 1993 and 2013. The area consists of several small communities located generally along and south of US Highway 290 between Fredericksburg and Johnson City. Significant commercial development, in the form of wineries and other tourism-related businesses, is also located in this area. In terms of meter growth (new end-use consumers), over the last 12 years this specific area has grown at a rate that is three times the overall CTEC system meter growth rate. This growth is projected to continue. As described above, commercial developments in the form of wineries have been attracted to this area in part due to the area's climate and the presence of beneficial soil types required for this industry as well as proximity to a major highway, US Highway 290. Much of the recent electric load growth has occurred in the southeastern area of Gillespie County generally along and south of US Highway 290. The expansion of this highway, by the Texas Department of Transportation (TxDOT), is already underway within this growth area.

Presently, two distribution circuits representing approximately 55 percent of the meters and 57 percent of the total electric load served out of the Goehmann Lane Substation provide distribution service to this area east and southeast of Fredericksburg. There are no other substations or distribution circuits adjacent to this area to provide back-up service (see area map provided as Attachment 4 to this Application). The distance between the Goehmann Lane Substation and the most remote end-use consumers, located in the southeastern-most portion of CTEC's service area exceeds 20 miles. As the need for electric service continues to increase, a corresponding decrease in reliability of service will impact a larger number of end-use consumers due to the remoteness of the electric load to the source for transmission service to the area (existing Goehmann Lane Substation). In terms of distribution service reliability, distribution system studies performed by CTEC revealed that the electric load of the two distribution circuits out of the Goehmann Lane Substation, which now supply the remote area electric load, will exceed seven Megawatts (MW) in 2018. This projected loading level violates CTEC's distribution circuit "6 MW Rule" loading criteria by 16 percent. Continued electric load growth on the CTEC distribution system in this area will exhaust available circuit capacities to such extremes that normal condition system performance will be threatened and reserve circuit capacity will not be available to respond to contingency conditions. In summary, regarding the impact of the area's high electric load growth coupled with the limited available electric delivery system:

- The present electric system's capability to reliably and adequately serve the electric load will be soon exceeded;
- There are no other substations adjacent to this area to provide back-up service;
- Reliability of electric service will impact a larger number of end-use consumers; and,

- Available circuit capacities will be exhausted to such extremes that normal condition system performance will be threatened and reserve circuit capacity will not be available to respond to contingency conditions.

Area Transmission Configuration

In terms of substation and transmission service reliability, the Goehmann Lane Substation, located in northeast Fredericksburg, contains two electric power transformers with a combined capacity rating of approximately 38 MW. The total peak electric load supplied by the Goehmann Lane Substation exceeded 26.4 MW in 2009. This substation is radially-supplied by a 4-mile 69-kV transmission line (i.e., supplied by a single transmission line) tapped to the 0.8-mile Fredericksburg to Live Oak 69-kV transmission line.

The Fredericksburg-Live Oak-Goehmann Lane 69-kV transmission line, Goehmann Lane's sole transmission line source, has experienced 17 outages over the past nine years for a total outage time of over 24 hours. More recently, in February 2013 and April 2013, a failure in this sole transmission line source to the Goehmann Lane Substation resulted in the loss of electric service to 4,000 end-use customers for more than two hours.

Over the last five years, CTEC has been working with LCRA TSC to minimize the impact to end-use customers resulting from the loss of service to the Goehmann Lane Substation by shifting electric load to other area substations. This includes the addition of electric power transformers at the Gillespie, Hollmig and Nebo substations. In the Fall of 2012, the Hollmig Substation, located west of the Goehmann Lane Substation, was placed in service to allow a permanent transfer of electric load from the Goehmann Lane Substation. This assisted in lowering the number of end-use customers that would lose electric service upon the loss of transmission service to the Goehmann Lane Substation. In the Fall of 2013, the Nebo Substation was completed and a permanent load transfer was made from the Goehmann Lane Substation to the Nebo Substation. CTEC continues to work on converting additional line segments to enable more end use customers to be switched permanently to the Nebo Substation. The addition of the Hollmig and Nebo substations allowed CTEC to transfer 1,120 customers from the Goehmann Lane Substation. The addition of the Blumenthal Substation will allow CTEC to transfer 1,795 more customers from the Goehmann Lane Substation, protecting them from outages caused by the loss of transmission service to the Goehmann Lane Substation. However, based on CTEC load projections, the total peak electric load supplied by the Goehmann Lane Substation is projected to once again reach 20 MW by 2020.

Transmission Performance of the Broader Area

Continuing to serve the area's electric load without the Proposed Project will result in transmission service degradation impacting a larger number of end-use consumers. On a broader scale, power flow studies indicate that at year 2018 electric load levels, the area's 138- and 69-kV transmission system is projected to experience violations of system

operating limits during contingency conditions. Existing transmission elements that are key sources to the area will overload (i.e., exceed 100 percent of the nominal thermal rating) during a single contingency condition:

1. The Fredericksburg 138/69-kV autotransformer will overload during the loss of the Gillespie 138/69-kV autotransformer (i.e., a single contingency condition).
2. The Fredericksburg to Goehmann Lane 69-kV transmission line will overload during the loss of the Gillespie 138/69-kV autotransformer (i.e., a single contingency condition).
3. The Gillespie 138/69-kV autotransformer will overload during the loss of the Fredericksburg 138/69-kV autotransformer (i.e., a single contingency condition).
4. With the Ferguson Power Plant out-of-service, both Doss and Harper substations will experience voltages below acceptable levels (below 92 percent) during the loss of the Gillespie 138/69-kV autotransformer (i.e., a single contingency condition).

Furthermore, regarding the area's transmission system configuration, the load in the Gillespie County area is supported locally by 138-kV transmission facilities connected at the Fredericksburg and Gillespie substations. However, the key sources to the area are from the Ferguson generating plant located in Llano County and the 345-kV Kendall Substation located in Kendall County. The Fredericksburg and Gillespie substations presently connect to transmission lines along a 138-kV transmission path that traverses through the middle of Gillespie County between the Ferguson generating plant and the Kendall Substation (see Figure 1). This configuration provides no redundancy for reliable service during certain conditions and/or emergencies (e.g., weather, fires, etc.) and could result in the loss of electric service to the area end-use customers.

C. Summary of the electric system deficiencies and responsibility to address these deficiencies

LCRA TSC has a binding obligation to provide reliable electric service in adherence to federal requirements set forth in the North American Electric Reliability Standards Corporation (NERC) reliability standards and state electric service reliability requirements set forth by ERCOT and the PUC. Further, consistent with industry practice and expectations, LCRA TSC also operates within its own set of reliability-based criteria to meet local electric service needs.

The reliability limitations, equipment overloads, and low voltage conditions described above violate local (LCRA TSC and CTEC), state (ERCOT), and federal (NERC) planning criteria that are summarized below.

- CTEC Planning Criteria
  - Section I - Paragraph A. Transmission voltages shall be maintained between 95 percent and 105 percent of nominal operating voltages for normal operating

conditions and at 92 percent or above for contingency situations involving loss of a transmission facility.

- Section I - Paragraph E. No more than 20 MW of peak load shall be interrupted for a single anticipated or unanticipated event to include loss of transmission line, circuit breaker, station bus, etc. Radial stations with more than 20 MW of peak load shall be identified as requiring looped transmission service (20 MW Rule).
- Section III - Paragraph C. To maintain adequate consumer reliability which meets or exceeds present levels, individual feeder loadings will be limited as follows: 6,000 kW (6 MW Rule).

- LCRA TSC Transmission System Planning Criteria, Section III.A
  - The transmission system voltages shall not exceed 105 percent nor fall below 92 percent of nominal voltage during single, multiple, or extreme contingency conditions.
- LCRA TSC Transmission System Planning Criteria, Section III.C
  - Planned transmission line electric loading will be such that National Electrical Safety Code line-to-ground clearances will be maintained for all anticipated normal and contingency conditions. Transmission system power flow shall not exceed 100 percent of the nominal conductor thermal rating.
- LCRA TSC Transmission System Planning Criteria, Section III.D
  - Planned electric loading on autotransformers, during normal, single, or multiple contingency conditions shall be limited to 100 percent of the auto-transformer's maximum MVA rating as derived consistent with the LCRA TSC Facility Rating Methodology.
- NERC Reliability Standard TPL-002 Requirement R2.
  - Upon the loss of a single element, the system shall remain stable and both thermal and voltage limits shall remain within applicable rating.

The Proposed Project improves the reliability of the transmission system in the Gillespie County area by eliminating the reliability limitations, equipment overloads, and low voltage conditions described above. In addition, the Proposed Project assists in providing necessary redundancy for transmission facilities that would improve reliability of electric service to the broader Gillespie County area during certain conditions and emergencies.

D. Description of how the Proposed Project will address the need

The Proposed Project addresses the deficiencies described above by:

- Providing a new electric load-serving substation (Blumenthal) appropriately located in the area experiencing high electric load growth;
- Relieving violations of the 6 MW Rule circuit loading criteria on the two circuits serving the area;
- Increasing the transmission service reliability for the electric loads in the Fredericksburg area by serving the new Blumenthal Substation from a

transmission source different from the radial source that currently serves all the electric load in this area;

- Reducing the electric loading on the heavily electric loaded 69-kV transmission system in the Fredericksburg area;
- Removing thermal overloads on the transmission system in the Fredericksburg area during contingency conditions;
- Removing voltage violations on the transmission system in the Fredericksburg area during contingency conditions; and,
- Diversifying the 138-kV source available to the broader area and thus increasing service reliability required during certain conditions and emergencies (i.e., serving from LCRA TSC's transmission line T342 instead of from T120).

E. Description of the steady state power flow analysis supporting the Proposed Project

The ERCOT Steady State Working Group power flow case 13DSB_2018_SUM1_TPIT_FINAL_02182013.raw was used to assess the areas anticipated electric system performance at forecasted electric load conditions and the effects of the resulting Proposed Project.

As stated above, power flow studies indicate that at year 2018 electric load levels the 69-kV system serving the area including the Goehmann Lane Substation is projected to experience violations of system operating limits during contingency conditions.

The Proposed Project improves the transmission system reliability in the Gillespie County Area by removing transmission system violations as shown in the power flow results summarized in Tables 1 and 2 below.

Table 1. Power Flow Study Results – Area facility contingency overloads

	Facility Loading Level	
Contingency	**Without Blumenthal Project**	**With Blumenthal Project**
Gillespie Autotransformer	106.8 %	85.5 %
Fredericksburg Autotransformer	102.6 %	80.3 %
Goehmann Lane Tap–Fredericksburg	117.6 %	92.8 %

Table 2. Power Flow Study Results – Area facility contingency voltages

	Facility Bus Voltage			
	Without Blumenthal Project		With Blumenthal Project	
Substation	Ferguson On	Ferguson Off	Ferguson On	Ferguson Off
Doss	93.3 %	90.6 %	92.9 %	92.9 %
Harper	94 %	91.3 %	93.6 %	93.5 %

F. Documentation of the review and recommendation of a PURA §39.151 organization

LCRA TSC and CTEC participated in the review of the assessments that resulted in the Proposed Project. Recently, CTEC sent a letter to LCRA TSC supporting the implementation of the project as proposed by LCRA TSC. This letter and LCRA TSC's response letter are provided as Attachment 2 to this Application. This Proposed Project (including all transmission alternatives considered and noted in the response to Question 15 of this Application) has been reviewed by the ERCOT staff. The Proposed Project was designated as a Tier 4 Project by ERCOT (PURA §39.151 organization). The documentation associated with ERCOT's review and determination is provided as Attachment 5 to this Application.

G. Historical electric load data and electric load projections supporting the need for the Proposed Project

The historical and forecasted peak electric loads for the Goehmann Lane Substation are presented in Figure 2 and Table 3 below. Figure 2 shows the summer and winter electric peak load served out of the Goehmann Lane Substation. Over the past 20 years (1993 to 2013), the peak load supplied by the Goehmann Lane Substation has increased at a compounded annual growth rate of 3.7 percent. In terms of number of meters, CTEC added 1,584 meters over a 12-year period with a rate of 7.64 percent and three times the overall CTEC system meter growth rate. This growth is anticipated to continue out of the Goehmann Lane Substation.

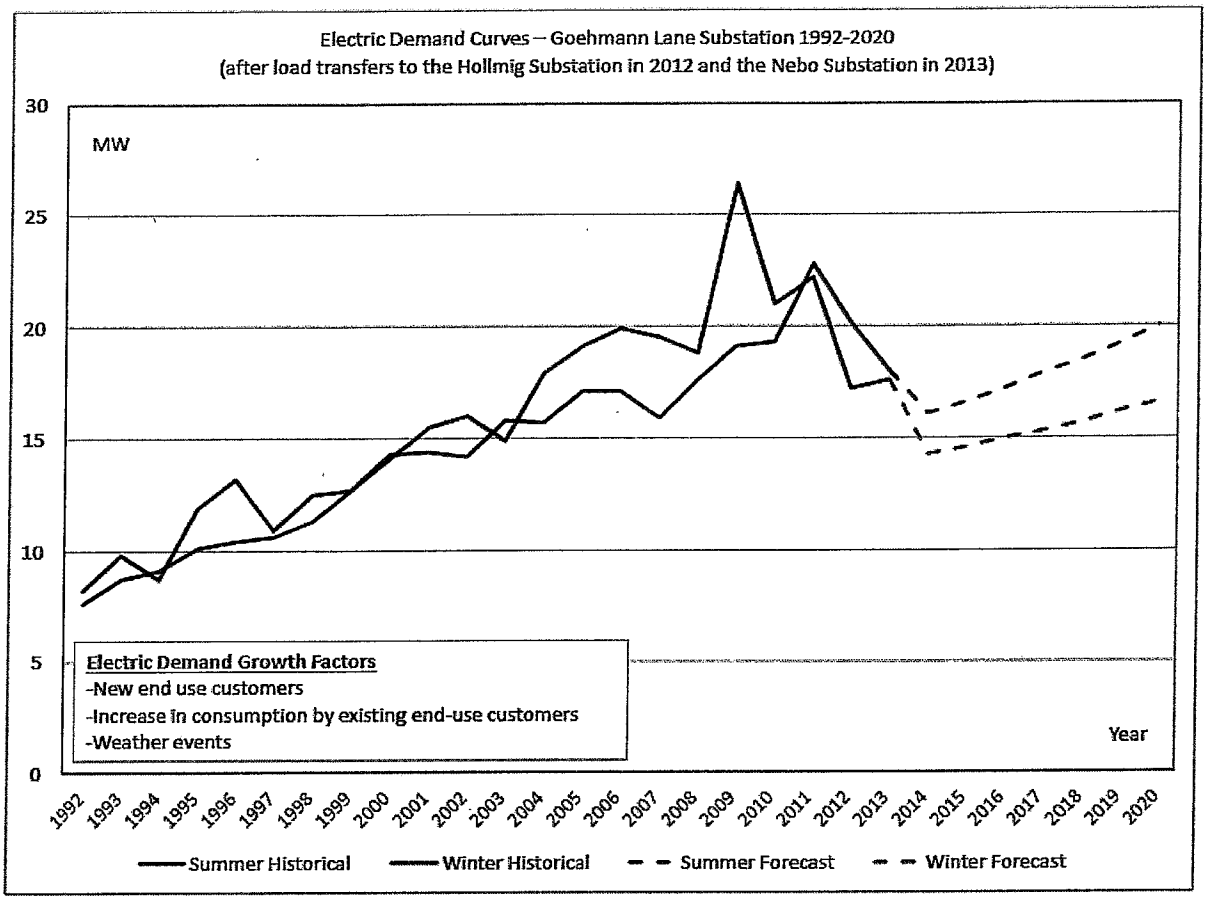

Figure 2 – Historical and Forecasted Electric Load Growth 1992 - 2020

Table 3. Historical (1991-2012) Electric Load, Forecasted (2013-2019) Electric Load

Goehmann Lane Substation Electric Peak Load (MW)					
Year	Summer	Winter	Year	Summer	Winter
			2006	17.1	19.9
1992	7.6	8.2	2007	15.9	19.5
1993	8.7	9.8	2008	17.6	18.8
1994	9.1	8.7	2009	19.1	26.4
1995	10.1	11.9	2010	19.3	21.0
1996	10.4	13.2	2011	22.8	22.2
1997	10.6	10.9	2012	20.1	17.2
1998	11.3	12.5	2013	18.0	*17.6
1999	12.7	12.7	2014	*16.1	*14.3
2000	14.3	14.1	2015	*16.6	*14.6
2001	14.4	15.5	2016	*17.2	*15.0
2002	14.2	16.0	2017	*17.9	*15.5
2003	15.8	14.9	2018	*18.5	*15.7
2004	15.7	17.9	2019	*19.1	*16.2
2005	17.1	19.1	2020	*20	*16.6

Peak load shown is after load transfer to the Hollmig Substation in 2012 and the Nebo Substation in 2013.

* forecasted load

H. Substations where LCRA TSC Provides Transmission Service to CTEC

LCRA TSC provides 138-kV and 69-kV transmission service to CTEC at a total of 23 substations including nine substations that are located in Gillespie County (Goehmann Lane, Gillespie, Hollmig, Nimitz, Live Oak, Eckert, Nebo, Harper and Doss substations).

Table 4. CTEC Substations by County

Substation	County
Bluffton	Llano
Buchanan	Llano
Castell	Llano
Doss	Gillespie
Eckert	Gillespie
Fredonia	Mason
Gillespie	Gillespie
Goehmann Lane	Gillespie
Harper	Gillespie

Hollmig	Gillespie
Ingram	Kerr
Jack Furman	Kerr
CTEC Kendall	Kendall
Kingsland I	Llano
Kingsland II	Llano
Live Oak	Gillespie
Mason	Mason
Nebo	Gillespie
Nimitz	Gillespie
Pitsburg	Llano
Rim Rock	Kerr
Sunrise Beach	Llano
Wolf Creek	Kerr

15. Alternatives to Project:

For a standard application, describe alternatives to the construction of this project (not routing options). Include an analysis of distribution alternatives, upgrading voltage or bundling of conductors of existing facilities, adding transformers, and for utilities that have not unbundled, distributed generation as alternatives to the project. Explain how the project overcomes the insufficiencies of the other options that were considered.

Per the information and data provided in response to question 14 of this CCN Application, doing nothing is not an alternative in meeting the growing need for adequate and reliable electric service within and around the Proposed Project area and the associated obligatory regulatory requirements.

A. Description of distribution alternatives

Over the last five years, CTEC has been working with LCRA TSC to minimize the impact to end-use consumers resulting from the loss of service to the Goehmann Lane Substation by shifting electric load to three area substations, Gillespie, Hollmig, and Nebo substations. This included the addition of electric load-serving transformers at the Gillespie, Hollmig and Nebo substations. CTEC has also upgraded the area's distribution facilities to increase available capacity and to avoid voltage problems until the proposed project is completed. Even with these upgrades, distribution capacity limitations will continue as a result of continued electric load growth in the area east and southeast of Fredericksburg.

In 2012, CTEC completed an engineering study (Attachment 6) to evaluate its electric system performance in meeting the projected electric load growth east and southeast of the Fredericksburg area. The purpose of the study was to evaluate the viability of system improvement alternatives to meet the growing electrical demands on the Goehmann Lane

Substation and resolve violations of the 20 MW and 6 MW Rules. A supplement to the 2012 study, prepared in June 2013, applied new load forecast data to the four alternatives discussed in the 2012 report. Those alternatives, of which three (Nos. 1, 2 and 3) failed to meet the requirements, were:

1. A Distribution Only Alternative consists of switching existing Goehmann Lane load to surrounding circuits at the Hollmig, Nebo and Live Oak substations. This switching included constructing a tie line from Goehmann Lane Circuit 3 to the Hollmig Substation, construction of a tie line from the Hollmig East Circuit to Live Oak Substation, and shifting load from Goehmann Lane Circuit 4 to Goehmann Lane Circuit 3 and from Goehmann Lane Circuit 3 to Circuit 1. The study determined that this alternative only temporarily resolves the 20 MW Rule violation but does not resolve the 6 MW Rule violation for the two Goehmann Lane circuits that are overloaded. However, CTEC has implemented these distribution improvements as part of its overall system strategy.

   It is worth noting that a "distribution alternative" of voltage conversion of the Goehmann Lane 3 and 4 circuits from 25-kV to 35-kV was considered at the time of the 2012 study but not carried forward as it was found not viable. This conversion did not resolve the planning criteria violations associated with the 20 MW rule or the 6 MW maximum circuit loading criteria. In addition, 35-kV is not a standard operating voltage on the CTEC system. CTEC system planning criteria and the 20 Year Long Range Plan have identified 24.9-kV as the maximum operating voltage required to reliably operate the system. Introducing 35-kV for this specific application would require significant material, safety, and operational changes to CTEC operating standards, and still does not satisfy the fundamental planning criteria violations that a viable solution for this area would need to resolve.

   Construction of an express distribution circuit to the Blumenthal area was also considered when examining "distribution alternatives", but was rejected as a solution because it failed to meet system planning criteria objectives. First, it did not solve the 20 MW rule condition at Goehmann Lane. Additionally, the express circuit would have to be overbuilt on the existing circuit running along US Highway 290, creating a 10.5 mile double-circuit line from the substation. While this conceptually solves the 6 MW loading criteria by splitting the load between two circuits, it fails to resolve the intent of the criteria which is to minimize the impact of a system outage to an increasingly significant number of end-use customers. A single contingency outage along the 10.5 mile common corridor of double-circuit will impact the same number of end-use customers and the same amount of load as a single-circuit serving the same load would have. The reliability criterion that was intended to limit single contingency interruptions to 6 MW per circuit would impact the same 6 MW along the double-circuit corridor initially, and an increasing number of end use customers as the load center grows in the Blumenthal area.

In addition to assuming the shift of load from Goehmann Lane to the Nebo and Hollmig substations, the study analyzed the construction of three alternative substations. Two of those alternative substations, Grapetown and Sisterdale, would have been located adjacent to existing 138-kV transmission lines.

2. The Grapetown alternative consisted of the Distribution Only Alternative improvements, construction of a new Grapetown Substation adjacent to the existing LCRA TSC Fredericksburg to Kendall 138-kV transmission line (T120), and construction of two Grapetown circuits built east along Doebbler Rd. to facilitate switching load from Goehmann Lane circuit 3 to the Grapetown Substation. Additional system improvements included area voltage conversion, rebuilding existing single and three phase lines, and building new three phase tie lines to switch load to the Grapetown Substation. The study determined that the Grapetown Substation alternative would temporarily address the 20 MW Rule violation, would not resolve the 6 MW Rule violation for one Goehmann Lane circuit, and would result in a 6 MW Rule violation on another circuit.

3. The Sisterdale alternative consisted of the distribution improvements contemplated in the Distribution Only Alternative, construction of a new Sisterdale Substation adjacent to the existing LCRA TSC Kendall to Mountain Top 138-kV transmission line (T342), switching load from Goehmann Lane circuit 3 to the Sisterdale Substation, and additional system improvements. These improvements include area voltage conversion, rebuilding existing single and three phase lines, and building new three phase tie lines to switch load to the Sisterdale Substation. The study determined that this alternative would only temporarily address the 20 MW Rule violation at Goehmann Lane, would not resolve the 6 MW Rule violation on one Goehmann Lane circuit, and would result in 6 MW Rule violations on two other circuits.

4. The Blumenthal alternative consists of constructing the LCRA TSC radial 138-kV transmission line from a tap point on the Kendall to Mountain Top 138-kV transmission line (T342) to a location for a new CTEC owned load-serving distribution substation in the Blumenthal area, and constructing four distribution circuits out of the new Blumenthal Substation to tie into the two existing circuits currently serving the area. The distribution study concluded that this alternative results in the best long-term solution by shifting approximately two thirds of the loading on Goehmann Lane circuits 3 and 4 from Goehmann Lane to the new substation. This resolves the 6 MW Rule circuit loading violation on the two existing circuits and provides for long-term capacity for the area, reducing loading at Goehmann Lane for long-term resolution of the 20 MW rule violation, and provides loading relief to the Fredericksburg 69- and 138-kV transmission system.

In assessing the area's delivery and distribution system, CTEC concluded that adding electric load-serving substations adjacent to existing 138-kV transmission lines southeast of the Goehmann Lane Substation and the associated distribution lines are not feasible alternatives for further consideration as the area continues to grow. This CTEC system study revealed limitations in serving the Goehmann Lane Substation electric load from other new substations during an outage of the 69-kV transmission line supplying the Goehmann Lane Substation. The limitations consisted of distribution circuit overloads, low voltage conditions, and decreased reliability. As a result of this study coupled with ongoing efforts to address the area load growth and reliability limitations for electric load served out of the Goehmann Lane Substation, CTEC concluded the following:

- Utilizing existing system substations and distribution circuits failed to provide resolution to both system loading issues primarily due to the location of the growing load center in the area east and southeast of Fredericksburg along US Highway 290, and limitations in available circuit capacity and topology from adjacent substations;
- Other substation options considered under existing transmission lines did not provide an adequate reliable alternative to satisfy both the 20 MW reliability rule at Goehmann Lane and the growing reliability loading issue on Goehmann Lane distribution lines;
- A substation located in the Blumenthal area efficiently integrates existing facilities and is geographically capable of providing long-term backup support to Goehmann Lane load; and
- The Blumenthal alternative provides the long-term solution to the system growth and reliability needs of CTEC in this area because it solves the 20 MW rule violation, solves the 6 MW circuit loading violation, does not impact other area substation circuits, (Hollmig and Nebo) and shifts load from the heavily loaded Fredericksburg 69- and 138-kV system to the Kendall to Mountain Top 138-kV line (T342).

A copy of the September 2012 CTEC engineering study and the June 2013 supplement are provided as Attachment 6 to this Application.

B. Description of the Proposed Project

The proposed alternative is to construct a 138-kV transmission line to serve the Blumenthal Substation from a point on the existing Kendall to Mountain Top 138-kV transmission line (T342, located generally southwest of the Blumenthal area). This alternative provides a 138-kV source to the new Blumenthal Substation and addresses the transmission-related violations on the transmission system. There are no thermal or voltage violations on the transmission system during contingency conditions with 2018 area electric loads and the Alternative 2 upgrades. This alternative provides the capacity to accommodate a larger electric load that can be served by the tap point in 2018 without causing thermal violations on the transmission system.

This proposed alternative improves the transmission system reliability in the Gillespie County Area by removing transmission system violations.

This proposed alternative addresses the deficiencies described above by:

- Providing a new electric load-serving substation (Blumenthal) appropriately located in the area experiencing high electric load growth;
- Increasing the transmission service reliability for the electric loads in the Fredericksburg area by serving the new Blumenthal Substation from a transmission source different from the radial source that currently serves all the electric load in this area;
- Reducing the electric loading on the heavily loaded 69-kV transmission system in the Fredericksburg area;
- Removing thermal overloads on the transmission system in the Fredericksburg area during contingency conditions;
- Removing voltage violations on the transmission system in the Fredericksburg area during contingency conditions;
- Providing transmission service diversification to a broad area that will assist in meeting electric service requirements during certain conditions or emergencies (i.e., serving from LCRA TSC's transmission line T342 instead of from T120); and,
- Supporting nearly four times the load growth when compared to utilizing a source on the existing transmission path between the Kendall Substation and the Ferguson generating plant.

C. Additional transmission alternative considered but rejected

In selecting an effective and appropriate long-term transmission source for connecting the Proposed Project, LCRA TSC considered an alternative to construct a 138-kV transmission line to serve the Blumenthal Substation from a point on the existing Kendall to Fredericksburg 138-kV transmission line (T120, located generally southwest of the Blumenthal area). Although, this alternative provides a 138-kV source to the new Blumenthal Substation, it resulted in continued violations on the transmission system by creating other transmission system limitations. Furthermore, this alternative does not result in transmission service diversification to assist in meeting electric service requirements during certain conditions or emergencies. Lastly, this alternative would only support approximately 25 percent of the area load growth when compared to the Proposed Project.

16. Schematic or Diagram:

For a standard application, provide a schematic or diagram of the applicant's transmission system in the proximate area of the project. Show the location and voltage of existing transmission lines and substations, and the location of the construction. Locate any taps, ties, meter points, or other facilities involving other utilities on the system schematic.

A map of the transmission system in the vicinity of the project is provided as Attachment 4 to this application. See also Figure 1 above.

17. **Routing Study:**

Provide a brief summary of the routing study that includes a description of the process of selecting the study area, identifying routing constraints, selecting potential line segments, and the selection of the routes. Provide a copy of the complete routing study conducted by the utility or consultant. State which route the applicant believes best addresses the requirements of PURA and P.U.C. Substantive Rules.

LCRA TSC retained POWER Engineers, Inc. (POWER) to prepare the *Environmental Assessment and Alternative Route Analysis for the Blumenthal Substation and 138-kV Transmission Line Project within Blanco, Gillespie and Kendall Counties, Texas* (EA), provided as Attachment 1 to the Application. The objective of the EA was to provide information in support of this Application in addressing the requirements of Section 37.056 (c)(4)(A)-(D) of the Texas Utilities Code, the Public Utility Commission of Texas (PUC) CCN Application form, and PUC Substantive Rule 25.101. By means of examination of existing environmental conditions, including the human and natural resources that are located in the project area, the EA evaluates the environmental effects that could result from the construction, operation, and maintenance of the proposed project. The EA may also be used in support of any additional local, state, or federal permitting activities that may be required for the proposed project.

To assist POWER in its evaluation, LCRA TSC provided information regarding the project endpoints, the need for the project, engineering and design requirements, construction practices, and right-of-way requirements for the proposed project.

Selecting the Study Area

POWER, with input and assistance from LCRA TSC, delineated a study area within which to review the existing environment and eventually to locate a robust number of geographically diverse alternative routes. The boundaries of this study area were originally determined by the proposed location of the new CTEC Blumenthal Substation, the existing LCRA TSC Kendall to Mountain Top 138-kV electric transmission line (T342), other existing ROW (e.g., highway), and existing cultural and land use features across the study area counties. The study area, shown in Figure 2-1 of the EA, is approximately 14 miles long by 16 miles wide, and encompasses an area of approximately 146 square miles (93,440 acres).

Routing Constraints

Once the study area was defined, environmental data related to land use, aesthetics, ecology, and cultural resources were collected by POWER by: conducting ground reconnaissance; reviewing available maps and aerial photography; reviewing previous

studies conducted in the area; contacting a variety of local, state, and federal agencies; and considering criteria established in Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code, the Commission's CCN application form, Commission Substantive Rule 25.101, and input from the public open house meeting. Using this information, the geographic locations of environmentally sensitive and other constraints were identified and located.

Selection of Potential Routing Segments

Preliminary alternative route segments were identified by evaluation of the constraints mapped for the study area and then by identifying routing opportunity areas such as existing corridors and other linear features. Through application of the routing criteria, as described above, 69 preliminary alternative route segments were identified and developed into potentially viable preliminary alternative routes for comparative purposes. These preliminary alternative route segments were further evaluated based on information received from government agencies, the public meetings, and additional landowner input. This eventually led to the identification for comparative purposes of 20 primary alternative routes. These routes were evaluated utilizing 42 land use and environmental criteria. Impacts were evaluated by POWER for each identified primary alternative route. Of course, additional forward progressing alternate routes may be formed by configuring the various segments in different ways.

Specific discussion regarding selection of the study area, identification of constraints, the selection of potential preliminary alternative route segments, and the alternative route analysis is set forth in the EA.

Selection of the alternative route the applicant believes best addresses the requirements of PURA and P.U.C. Substantive Rules

LCRA TSC used a consensus process to independently select Route 17 as the primary alternative route that LCRA TSC representatives believe best addresses the requirements of PURA and P.U.C. Substantive Rules for this project. LCRA TSC initially reviewed the EA, followed by a review of each alternative route. This review included the consideration of all of the factors and criteria listed in PURA and the P.U.C. Substantive Rules including potential environmental, cultural, and land use impacts, engineering constraints, public input and community values, estimated costs, system planning, and landowner, agency, and utility concerns and preferences. LCRA TSC representatives identified Route 17 as the route which best addresses the requirements of PURA and P.U.C. Substantive Rules based on the following advantages:

- shortest route (approx. 10.4 miles)
- lowest estimated cost (approx. $24.5 million total cost)
- small number of habitable structures located within 300 ft. (8)
- 77 percent (8 miles) of the route parallels apparent property lines and existing compatible ROW
- least area of ROW across modeled golden-cheeked warbler habitat (0 acres)

- least number of stream crossings (19)

Based on this review and evaluation, LCRA TSC determined that each of the primary alternative routes was a feasible and acceptable alternative. Other than Route 17, LCRA TSC did not rank the other alternative routes. All alternative routes included in this application as well as forward progressing alternative routes that may be created using the noticed segments, substation and tap point locations included in this application are, in LCRA TSC's opinion, acceptable routes for the project.

18. **Public Meeting or Public Open House:**
Provide the date and location for each public meeting or public open house that was held in accordance with P.U.C. PROC. R. 22.52. Provide a summary of each public meeting or public open house including the approximate number of attendants, and a copy of any survey provided to attendants and a summary of the responses received. For each public meeting or public open house provide a description of the method of notice, a copy of any notices, and the number of notices that were mailed and/or published.

LCRA TSC held an open house meeting for the Blumenthal Substation and 138-kV transmission line project. The open house meeting was held on May 15, 2014, from 5:30 P.M. to 7:30 P.M. at the Stonewall Chamber of Commerce in Stonewall, Texas. LCRA TSC mailed 356 individual written notices of the meeting to all owners of property within 300 feet of the centerline of the preliminary alternative segments. Also, public officials and various state/federal regulatory agencies were mailed or delivered individual written notice of the meeting. In addition, a public notice was placed in multiple local newspapers including the *San Antonio Express News* [April 30 and May 7], *Fredericksburg Standard-Radio Post* [April 30 and May 7], *Johnson City Record Courier* [May 1 and 8], *Comfort News* [May 1 and 8], *Blanco County News* [April 30 and May 7], and *Boerne Star* [May 6 and 13] announcing the location, time, and purpose of the meeting. A copy of the open house notice published in newspapers is provided in Appendix B of the EA.

The meeting was intended to solicit comments from citizens, landowners, and public officials concerning the proposed project. The meeting had the following objectives:

- Promote a better understanding of the proposed project including the purpose, need, and potential benefits and impacts, and PUC certification process;
- Inform the public with regard to the routing procedure, schedules; and route approval process; and
- Gather the values and concerns of the public and community leaders.

The meeting was configured in an informal information station format rather than a formal speaker/audience format with each station assigned to a particular aspect of the project, or routing process, and staffed with LCRA, CTEC, and/or POWER staff. Each station included maps, illustrations, photographs, photo simulations, and/or text explaining each particular topic. A GIS computer station was available to show the extent of the project, the proposed preliminary alternative route segments, property ownership parcel boundaries, and recent aerial photography of the project area. The GIS station was also available to answer detailed questions such as the approximate distance from the proposed route segment centerline to the nearest corner of a habitable structure. Interested citizens and property owners were encouraged to visit each station in order, so that the entire process could be explained in the logical sequence of project development. The information station format is typically advantageous because it allows attendees to process information in a more relaxed manner and also allows them to focus on their particular area of interest and ask specific questions. Furthermore, the one-to-one discussions with LCRA, CTEC, and/or POWER personnel typically encourage more interaction from those citizens who might be hesitant to participate in a more formal speaker-audience format.

A total of 189 citizens/landowners signed in as attending the May 15, 2014 public open house meeting. Other attendees declined to sign in, and LCRA TSC estimates that over 200 people actually attended the open house. All attendees were offered a questionnaire, a preliminary route segment map, and a frequently asked questions sheet (see EA). Some citizens/landowners handed in completed questionnaires at the meeting (56) while others took questionnaires with them, acquired questionnaires from neighbors, or acquired it from the LCRA website. A total of 127 respondents not handing in the questionnaire at the open house sent completed questionnaires to LCRA TSC. A total of 183 questionnaires were received by LCRA TSC at or subsequent to the May 15, 2014 public open house meeting and other comments were sent in the form of letters or emails.

Additional discussion concerning the public involvement program, specific information regarding the individual public meetings, and discussion summarizing the questionnaire results may be found in Section 4.3.2.1 pages 4-3 through 4-5 of the EA. A representative copy of the questionnaire provided to meeting attendees is included in Appendix B of the EA.

In addition to the open house, LCRA and CTEC staff met individually or in groups with more than 75 landowners or their representatives. LCRA staff also participated in a landowner workshop in Fredericksburg hosted by the Hill Country Alliance on Saturday, September 6, 2014. Refer to Section 4.3.2.2 in the EA for a discussion of the post open house meetings.

19. **Routing Maps:**

Base maps should be a full scale (one inch = not more than one mile) highway map of the county or counties involved, or other maps of comparable scale denoting sufficient cultural and natural features to permit location of all routes in the field. Provide a map (or maps) showing the study area, routing constraints, and all routes or line segments that were considered prior to the selection of the routes. Identify the routes and any existing facilities to be interconnected or coordinated with the project. Identify any taps, ties, meter points, or other facilities involving other utilities on the routing map. Show all existing transmission facilities located in the study area. Include the locations of radio transmitters and other electronic installations, airstrips, irrigated pasture or cropland, parks and recreational areas, historical and archeological sites (subject to the instructions in Question 27), and any environmentally sensitive areas (subject to the instructions in Question 29).

Provide aerial photographs of the study area displaying the date that the photographs were taken or maps that show (1) the location of each route with each route segment identified, (2) the locations of all major public roads including, as a minimum, all federal and state roadways, (3) the locations of all known habitable structures or groups of habitable structures (see Question 19 below) on properties directly affected by any route, and (4) the boundaries (approximate or estimated according to best available information if required) of all properties directly affected by any route .

For each route, cross-reference each habitable structure (or group of habitable structures) and directly affected property identified on the maps or photographs with a list of corresponding landowner names and addresses and indicate which route segment affects each structure/group or property.

<u>Base Maps</u>

Figure 4-8 of the EA (Appendix D), titled *Primary Alternative Routes*, produced at a scale of 1 inch = 1,200 ft, is provided in map pockets in the EA. These maps were produced using a USGS topographic base. These maps depict the study area for the project, locations of radio transmitters and other electronic installations, airports/airstrips, parks and recreational areas, historical sites, environmentally sensitive areas and other constraints. The maps also contain the alternative routes for the project. For protection of the archaeological sites they are not shown on the maps.

Figure 5-1 of the EA (Appendix E), titled *Habitable Structures and Other Land Use Features in the Vicinity of the Primary Alternative Routes*, which consists of aerial photography produced at a scale of 1 inch = 1,200 ft, is provided in a map pocket in the EA. The aerial photo-based maps include property boundaries in the study area and the locations of all known habitable structures located within 300 feet of the centerline of primary alternative routes on properties directly affected by the project. The habitable

structures and other land use features map (Figure 5-1, Appendix E of the EA) was produced using aerial imagery flown in August 2013.

Base maps include sufficient cultural and natural features to permit location of the alternative routes in the field, and they depict existing electric transmission lines (based on information available to POWER), and major public roads located within the study area, as applicable.

Maps showing the study area and all preliminary route segments in a format similar to EA Figures 4-8 and 5-1 were presented at the public open house meeting and considered prior to the selection of the primary alternative routes. Figure 4-1 and the map included in Appendix B depict the preliminary route segments presented at the open house.

Directly Affected Property Maps

Attachment 7 to this application includes 12 maps (utilizing aerial photography) titled *Location of Directly Affected Properties,* that identify directly affected properties, tract IDs, and the location of habitable structures (including labels) within 300 feet of the centerline of the transmission line alternatives from the alternate tap point sites located along the Kendall to Mountain Top transmission line (T342) to the Blumenthal alternate substation locations and approximate property boundary lines. These maps show the location of each proposed alternative route with each route segment identified, and the locations of all major public roads including all federal and state roadways.

Attachment 8 to this application is a list that cross-references each habitable structure, or group of habitable structures, and directly affected properties identified on the maps provided in Attachment 7 with a list of tract IDs and corresponding landowner names and addresses. Landowner names and addresses were obtained by review of information obtained from the Blanco, Gillespie and Kendall County Tax Appraisal Districts.

20. **Permits:**
List any and all permits and/or approvals required by other governmental agencies for the construction of the proposed project. Indicate whether each permit has been obtained.

The following permits/approvals will be obtained after PUC approval, but prior to the commencement of construction:

- Where the proposed transmission line crosses a state-maintained road or highway, LCRA TSC will obtain a permit from TxDOT. If any portion of the transmission line will be accessed from a state-maintained road or highway, LCRA TSC will obtain a permit from TxDOT.
- Since more than one acre will be disturbed during construction of the project, a Storm Water Pollution Prevention Plan (SWPPP) will be prepared; and since more than five acres will be disturbed, a Notice of Intent (NOI) will be submitted

by LCRA TSC to the Texas Commission on Environmental Quality (TCEQ). The controls specified in the SWPPP will be monitored in the field.

- LCRA TSC will prepare a detailed Natural Resources Assessment (NRA) and Cultural Resources Assessment (CRA) on the approved transmission line route. Depending upon the results of these assessments, permits, or regulatory approvals may be required from the U.S. Army Corps of Engineers (USACE), and/or the U.S. Fish and Wildlife Service (USFWS).
- After alignments and structure locations/heights are adjusted and set, LCRA TSC will make a final determination of the need for Federal Aviation Administration (FAA) notification, based on structure locations and structure designs. In some areas, if necessary, LCRA TSC could use lower-than-typical structure heights and LCRA TSC could add marking and/or lighting to certain structures.
- LCRA TSC will report the transmission line project to the PUC on LCRA TSC's Monthly Construction Progress Report, beginning with the first report following the filing of a CCN application, and in each subsequent monthly progress report until construction is completed and actual project costs have been reported. As required by the PUC, LCRA TSC will submit locational and attribute data for the approved route after it is constructed.

21. **Habitable structures:**

For each route list all single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis within 300 feet of the centerline if the proposed project will be constructed for operation at 230kV or less, or within 500 feet of the centerline if the proposed project will be constructed for operation at greater than 230kV. Provide a general description of each habitable structure and its distance from the centerline of the route. In cities, towns or rural subdivisions, houses can be identified in groups. Provide the number of habitable structures in each group and list the distance from the centerline of the route to the closest and the farthest habitable structure in the group. Locate all listed habitable structures or groups of structures on the routing map.

The locations of habitable structures within 300 feet of the ROW centerline are listed and described with the approximate distance from the ROW centerline in Appendix C, Tables 5-3 through 5-22 of the EA and are shown on Figure 5-1, Sheet Nos. 1 and 2 in Appendix E of the EA. The total numbers of habitable structures for the 20 primary alternative routes are provided in the table below.

Primary Alternative Route	Total Number of Habitable Structures within 300 feet of the ROW Centerline
1	12
2	19
3	9
4	6
5	10
6	6
7	7
8	6
9	19
10	7
11	9
12	4
13	10
14	14
15	3
16	2
17	8
18	5
19	11
20	11

22. **Electronic Installations:**

For each route, list all commercial AM radio transmitters located within 10,000 feet of the center line of the route, and all FM radio transmitters, microwave relay stations, or other similar electronic installations located within 2,000 of the center line of the route. Provide a general description of each installation and its distance from the center line of the route. Locate all listed installations on a routing map.

There are no known commercial AM radio transmitters located within 10,000 feet of the centerline of any of the primary alternative routes. There are five known communication towers (FM radio transmitters, microwave relay stations, or other similar electronic

installations) that are located within 2,000 feet of the primary alternative routes. A listing, description, and approximate distance from the centerline for each of the primary alternative routes are presented in Appendix C, Tables 5-3 through 5-22 of the EA, and the locations of these electronic installations are shown on Figures 4-8 and 5-1, Page Nos. 1 and 2 in Appendix D and E of the EA.

For additional information on electronic installations see Section 2.8.5, page 2-43 and Section 5.2.6, page 5-26 of the EA. None of the routes filed in this Application are anticipated to have any impact on the communication towers.

23. Airstrips:

For each route, list all known private airstrips within 10,000 feet of the center line of the project. List all airports registered with the Federal Aviation Administration (FAA) with at least one runway more than 3,200 feet in length that are located within 20,000 feet of the center line of any route. For each such airport, indicate whether any transmission structures will exceed a 100:1 horizontal slope (one foot in height for each 100 feet in distance) from the closest point of the closest runway. List all listed airports registered with the FAA having no runway more than 3,200 feet in length that are located within 10,000 feet of the center line of any route. For each such airport, indicate whether any transmission structures will exceed a 50:1 horizontal slope from the closest point of the closest runway. List all heliports located within 5,000 feet of the center line of any route. For each such heliport, indicate whether any transmission structures will exceed a 25:1 horizontal slope from the closest point of the closest landing and takeoff area of the heliport. Provide a general description of each listed private airstrip, registered airport, and heliport; and state the distance of each from the center line of each route. Locate and identify all listed airstrips, airports, and heliports on a routing map.

POWER's review of federal and state aviation/airport maps and directories, aerial photo interpretation and reconnaissance surveys, as well as information received from the TxDOT Division of Aviation, identified no FAA-registered airports, and no heliports located either within the study area, or in proximity to the study area. Four private airstrips were identified within 10,000 feet of the primary alternative route centerlines.

Each airport/airstrip is listed and described with the approximate distance from the centerline for each of the primary alternative routes in Appendix C, Table 5-3 through 5-22 of the EA. These facilities are shown on Figures 4-8 and 5-1, Page Nos. 1 and 2 in Appendix D and E of the EA.

For additional information on airports/airstrips see Section 2.8.4, pages 2-42 through 2-43 and Section 5.2.4, pages 5-24 through 5-25 of the EA. No significant impacts to these airports/airstrips are anticipated from construction of the proposed project.

Following approval of a route by the PUC, LCRA TSC will make a final determination of the need for FAA notification, based on specific route location and structure design. The result of this notification, and any subsequent coordination with FAA, could include changes in the line design and/or potential requirements to mark and/or light the structures.

24. Irrigation Systems:

For each route identify any pasture or cropland irrigated by traveling irrigation systems (rolling or pivot type) that will be traversed by the route. Provide a description of the irrigated land and state how it will be affected by each route (number and type of structures etc.). Locate any such irrigated pasture or cropland on a routing map.

According to the results of POWER's review of aerial photos and field reconnaissance, the proposed project does not cross any known cropland or pastureland irrigated by traveling irrigation systems, either rolling or pivot type.

25. Notice:

Notice is to be provided in accordance with P.U.C. PROC. R. 22.52.

A. Provide a copy of the written direct notice to owners of directly affected land. Attach a list of the names and addresses of the owners of directly affected land receiving notice.

A copy of the written direct notice, with attachments, mailed to owners of directly-affected land is provided as Attachment 9 to this application. A list of the names and addresses of those owners of directly-affected land to whom notice was mailed by first-class mail is provided as Attachment 8 to this application. Landowners of record and their mailing addresses were determined by review of information obtained from the Blanco, Gillespie, and Kendall County Tax Appraisal Districts.

B. **Provide a copy of the written notice to utilities that are located within five miles of the routes.**

A copy of the written notice provided to utilities located within five miles of the proposed project is provided as Attachment 10 to this application. The names and addresses of utilities to whom the written notices were sent are provided in Attachment 11, page 1.

C. **Provide a copy of the written notice to county and municipal authorities.**

A copy of the written notice provided to county and municipal authorities is provided as Attachment 10 to this application. The names and addresses of

county and municipal authorities to whom the written notices were sent are provided in Attachment 11, page 2. The same letter was sent to utilities, counties, and municipal authorities. Also, although not required by the application, LCRA TSC sent additional notification letters. The following were also mailed direct mail notices: Texas Office of Public Utility Counsel (Attachment 11, page 1), other groups or stakeholders (Attachment 11, page 1), state and federal elected officials (Attachment 11, page 3), and independent school districts (Attachment 11, page 4).

D. **Provide a copy of the notice that is to be published in newspapers of general circulation in the counties in which the facilities are to be constructed. Attach a list of the newspapers that will publish the notice for this application. After the notice is published, provide the publisher's affidavits and tear sheets.**

A copy of the public notice to be published in the *Fredericksburg Standard Radio-Post, Johnson City Record Courier, Comfort News, Blanco County News,* and *Boerne Star* (newspapers of general circulation in the counties [Blanco, Gillespie and Kendall] in which the transmission facilities are to be constructed) once for one week after the application is filed with the PUC is provided in Attachment 12 to this application. Publisher's affidavits will be filed with the Commission showing proof of notice as soon as available after filing of this application.

For a CREZ application, in addition to the requirements of P.U.C. PROC. R. 22.52 the applicant shall, not less than twenty-one (21) days before the filing of the application, submit to the Commission staff a "generic" copy of each type of alternative published and written notice for review. Staff's comments, if any, regarding the alternative notices will be provided to the applicant not later than seven days after receipt by Staff of the alternative notices, Applicant may take into consideration any comments made by Commission staff before the notices are published or sent by mail.

26. **Parks and Recreation Areas:**
For each route, list all parks and recreational areas owned by a governmental body or an organized group, club, or church and located within 1,000 feet of the center line of the route. Provide a general description of each area and its distance from the center line. Identify the owner of the park or recreational area (public agency, church, club, etc.). List the sources used to identify the parks and recreational areas. Locate the listed sites on a routing map.

POWER reviewed U.S. Geological Survey topographic maps, TxDOT county highway maps, recent aerial photography, and conducted field reconnaissance to identify parks

and recreation areas. Based on this review, POWER identified no parks or recreational areas located within 1,000 feet of the centerline of the primary alternative routes.

For more information on parks and recreational areas see Section 2.8.6, pages 2-43 through 2-44, and Section 5.2.5, page 5-25 of the EA. No significant impacts to the use or enjoyment of the parks and recreation facilities located within the study area are anticipated from any of the primary alternative routes.

27. **Historical and Archeological Sites:**

For each route, list all historical and archeological sites known to be within 1,000 feet of the center line of the route. Include a description of each site and its distance from the center line. List the sources (national, state or local commission or societies) used to identify the sites. Locate all historical sites on a routing map. For the protection of the sites, archeological sites need not be shown on maps.

POWER conducted a literature review and records search at the Texas Historical Commission and The Texas Archeological Research Laboratory at the University of Texas at Austin to identify known historical and archaeological sites located within 1,000 feet of the primary alternative routes. For more information regarding site descriptions and the evaluation of the historical and archaeological sites see Section 2.11, pages 2-50 through 2-66, and Section 5.3, pages 5-28 through 5-32 of the EA.

Based on this review, no previously recorded historic sites are located within 1,000 feet of the primary alternative routes. There are ten known prehistoric archaeological sites located within 1,000 feet of the primary alternative route centerlines. These sites are listed and described with the approximate distance from the centerline for each of the primary alternative routes in Appendix C, Tables 5-3 through 5-22 of the EA. For the protection of these sites, they are not shown on the routing maps.

28. **Coastal Management Program:**

For each route, indicate whether the route is located, either in whole or in part, within the coastal management program boundary as defined in 31 T.A.C. §503.1. If any route is, either in whole or in part, within the coastal management program boundary, indicate whether any part of the route is seaward of the Coastal Facilities Designation Line as defined in 31 T.A.C. §19.2(a)(21). Using the designations in 31 T.A.C. §501.3(b), identify the type(s) of Coastal Natural Resource Area(s) impacted by any part of the route and/or facilities.

No part of any primary alternative route is located within the Coastal Management Program boundary, as defined in 31 T.A.C. §503.1.

29. **Environmental Impact:**

Provide copies of any and all environmental impact studies and/or assessments of

the project. If no formal study was conducted for this project, explain how the routing and construction of this project will impact the environment. List the sources used to identify the existence or absence of sensitive environmental areas. Locate any environmentally sensitive areas on a routing map. In some instances, the location of the environmentally sensitive areas or the location of protected or endangered species should not be included on maps to ensure preservation of the areas or species. Within seven days after filing the application for the project, provide a copy of each environmental impact study and/or assessment to the Texas Parks and Wildlife Department (TPWD) for its review at the address below. Include with this application a copy of the letter of transmittal with which the studies/assessments were or will be sent to the TPWD.

Wildlife Habitat Assessment Program
Wildlife Division
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

The applicant shall file an affidavit confirming that the letter of transmittal and studies/assessments were sent to TPWD.

Please see the EA. The EA describes the natural resources, cultural resources, land uses, and other sensitive areas that may occur in the project area. The EA also describes how the proposed project may impact the environment. Specifically, the EA includes data obtained from TPWD including the Texas Natural Diversity Database (TXNDD) and a list of Ecologically Significant Stream Segments (ESSS) in the study area.

LCRA TSC will provide a copy of the EA to TPWD within seven days after the application is filed. A copy of the letter of transmittal of the EA to TPWD is provided as Attachment 13 to this application. An affidavit confirming that the letter of transmittal and a copy of the EA were sent to TPWD will be filed with the PUC.

30. Affidavit

Attach a sworn affidavit from a qualified individual authorized by the applicant to verify and affirm that, to the best of their knowledge, all information provided, statements made, and matters set forth in this application and attachments are true and correct.

A sworn affidavit is attached below.

AFFIDAVIT OF LANCE WENMOHS

STATE OF TEXAS §
§
§

Before me, the undersigned authority, Lance Wenmohs, being first duly sworn, deposes and states:

"My name is Lance Wenmohs. I am Manager of Siting & Certification with the Lower Colorado River Authority. I am over the age of twenty-one, and am competent to make the following affidavit:

On behalf of LCRA Transmission Services Corporation (LCRA TSC) and in my capacity as the Manager of Sititng & Certification on the Blumenthal Substation and 138-kV Transmission Line Project, I am authorized to file and verify the CCN Application for LCRA TSC. I am personally familiar with the documents filed with this application, and I have complied with all the requirements contained in the application; furthermore, all such statements made and matters set forth herein with respect to LCRA TSC are true and correct."

Lance Wenmohs
Affiant

SUBSCRIBED AND SWORN TO BEFORE ME, a Notary Public in and for the State of Texas, this 27th day of October, 2014.

CAROLYN STEGALL
Notary Public, State of Texas
My Commission Expires
June 14, 2018

Notary Public

ENVIRONMENTAL ASSESSMENT AND ALTERNATIVE ROUTE ANALYSIS FOR THE PROPOSED BLUMENTHAL SUBSTATION AND 138-kV TRANSMISSION LINE PROJECT BLANCO, GILLESPIE AND KENDALL COUNTY, TEXAS

Prepared for:

LCRA Transmission Services Corporation
P.O. Box 220
Austin, Texas 78767

Prepared by:

POWER Engineers, Inc.
509 N Sam Houston Pkwy. East, Suite 200
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October 2014

POWER ENGINEERS

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Acronyms and Abbreviations

ACSR	Aluminum conductor, steel-reinforced
amsl	above mean sea level
B.P.	Before Present
BEG	Bureau of Economic Geology
BGEPA	Bald and Golden Eagle Protection Act
BRM	burned rock middens
CCN	Certificate of Convenience and Necessity
CLF	civilian labor force
CR	County Road
CRA	Cultural Resources Assessment
CTEC	Central Texas Electrical Cooperative
CWA	Clean Water Act
EA	Environmental Assessment
ESA	Endangered Species Act
ESSS	Ecologically Significant Stream Segment
FAA	Federal Aviation Administration
FCC	Federal Communication Commission
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FM	Farm to Market Road
GIS	Geographic Information Systems
GLO	Texas General Land Office
HPA	high probability areas
HTC	Historic Texas Cemeteries
ISD	Independent School District
kV	kilovolt
LCRA TSC	LCRA Transmission Services Corporation
MBTA	Migratory Bird Treaty Act
MW	megawatt
NESC	National Electrical Safety Code
NHD	National Hydrology Dataset
NOI	Notice of Intent
NPS	National Park Service
NRA	Natural Resources Assessment
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
OPGW	fiber optic ground wire
OTHM	Official Texas Historical Marker
PEM	palustrine emergent
PFO	forested/shrub
POWER	POWER Engineers, Inc.
PUB	ponds
PUCT	Public Utility Commission of Texas
RIP	Record-Investigate-Protect
ROW	right-of-way
RRC	Railroad Commission of Texas