Control Number: 38354

Item Number: 2338

Addendum StartPage: 0

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§ § § § § § § § § §	**BEFORE THE STATE OFFICE** **OF** **ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

COMES NOW LCRA Transmission Services Corporation (LCRA TSC) and files this, its Response to Clear View Alliance's (CVA) Fourth Request for Information. This Response is timely filed. LCRA TSC agrees and stipulates that all parties may treat these responses as if the answers were filed under oath.

Respectfully submitted,

BICKERSTAFF HEATH DELGADO
ACOSTA LLP
R. Michael Anderson
Texas State Bar No. 01210050
Joe N. Pratt
Texas State Bar No. 16240100
3711 S. MoPac Expressway
Building One, Suite 300
Austin, Texas 78746
(512) 472-8021
(512) 320-5638 (FAX)
Email: rmanderson@bickerstaff.com
jpratt@bickerstaff.com

2338

William T. Medaille
Associate General Counsel
Texas State Bar No. 24054502
Fernando Rodriguez
Associate General Counsel
Texas State Bar No. 17145300
Lower Colorado River Authority
P.O. Box 220
Austin, Texas 78767-0220
Telephone: (512) 473-3354
Facsimile: (512) 473-4010
Email: bill.medaille@lcra.org
ferdie.rodriguez@lcra.org
For Service: Docket38354CREZ@lcra.org

By: _____
William T. Medaille

ATTORNEYS FOR LCRA TRANSMISSION SERVICES CORPORATION

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing document was served on the propounding party (pursuant to Order Nos. 1-3) this the 20th day of September, 2010, by e-mail, facsimile, First-Class U.S. mail, or by hand delivery.

_____
William T. Medaille

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-1:

Please provide a copy of the CD containing the following revised data:

SixMileRanch_1stRFI_Q1-2_Attachment1_Revised.xlsx

referred to in your Supplemental Response to Six Mile Ranch's First RFIs, Request No. 1-2.

Response No. 4-1:

The requested file is already available on the PUC Interchange under the "Native Files" folder in Document Number 1616. The document is being provided on CD to the propounding party, and it will be provided to other parties upon request.

Preparer: Curtis Symank Title: Engineering Supervisor, LCRA
Sponsor: Curtis Symank Title: Engineering Supervisor, LCRA

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-2:

Looking at Wayne Hick's Direct Testimony at page 6 where he discusses other stations on the proposed transmission line routes, Mr. Hicks states that ETT "will own and construct series compensation station(s) somewhere along the line route between the McCamey D and Kendall stations." He also states that "the location and final arrangement of these stations is awaiting further studies by ERCOT and ETT." Please provide the following information:

a. State the function and purpose general of a series compensation station;
b. State the function and purpose of locating a series compensation station along the line route between McCamey D and Kendall stations;
c. State whether LCRA TSC has constructed and owns any series compensation station(s) in Texas; and
d. If your response to subpart (c) was "yes", state the number and location of such series compensation station(s).

Response No. 4-2:

a. The function of a series compensation station is to locate equipment associated with the series compensation requirements of the transmission line. The series compensation device is applied to maximize the use of a transmission line by shortening its electrical impedance increasing its power transfer capability.

b. Locating a series compensation device on the McCamey D to Kendall 345-kV transmission line is consistent with the results of the ERCOT CREZ Transmission Optimization Study subsequently ordered for construction by the Commission as part of the CREZ Transmission Plan and assigned to Electric Transmission Texas (ETT).

c. LCRA TSC has not constructed nor does it currently own a series compensation station.

d. Not applicable.

Preparer: Sergio Garza	Title: Manager, System Planning & Protection, LCRA
Co-Sponsor: Sergio Garza	Title: Manager, System Planning & Protection, LCRA
Co-Sponsor: Wayne Hicks	Title: Engineering Manager, TL Design, LCRA

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-3:

Looking at Wayne Hick's Direct Testimony at page 6 where he discusses other stations on the proposed transmission line routes, Mr. Hicks states that ETT "will own and construct series compensation station(s) somewhere along the line route between the McCamey D and Kendall stations." He also states that "the location and final arrangement of these stations is awaiting further studies by ERCOT and ETT." Please provide the following information:

a. Provide a general description of the nature of the further studies referred to in the quoted testimony;
b. State whether the further studies are being conducted independently by ERCOT and ETT, or are a joint undertaking;
c. State when the results of the further studies are expected to be available;
d. State whether the planned construction of series compensation station(s) was considered by PBS& J or LCRA TSC in selecting the proposed alternative routes for the McCamey D to Kendall transmission line and, if so, what the result of that consideration was.

Response No. 4-3:

a. ERCOT is currently conducting dynamic stability studies to define the details associated with all the reactive compensation devices included in the CREZ Transmission Plan (e.g. series compensation, shunt reactors, shunt capacitors).

b. These reactive compensation studies discussed by Mr. Hicks are being conducted by a contractor hired by ERCOT. Transmission Service Providers and other ERCOT market participants provide input for the study. LCRA TSC does not know if either ERCOT or

ETT are conducting additional independent studies.

c. ERCOT has informed LCRA TSC that it anticipates finalizing the CREZ reactive compensation study by September 22, 2010.

d. The planned construction of a series compensation station(s) was not a consideration by PBS&J or LCRA TSC in selecting the proposed alternative routes for the McCamey D to Kendall transmission line.

Co-Preparer: Rob Reid	Title: Vice President/Principal Project Director, PBS&J
Co-Preparer: Sergio Garza	Title: Manager, System Planning & Protection, LCRA
Co-Sponsor: Wayne Hicks	Title: Engineering Manager, TL Design, LCRA
Co-Sponsor: Sergio Garza	Title: Manager, System Planning & Protection, LCRA
Co-Sponsor: Rob Reid	Title: Vice President/Principal Project Director, PBS&J

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-4:

Looking at Wayne Hick's Direct Testimony at page 6 where he discusses other stations on the proposed transmission line routes, Mr. Hicks states that ETT "will own and construct series compensation station(s) somewhere along the line route between the McCamey D and Kendall stations." He also states that "the location and final arrangement of these stations is awaiting further studies by ERCOT and ETT." Do you have any reason to expect that the results of the further studies will in any way affect the selection of a route for the proposed transmission line between McCamey D and Kendall? If so, please describe why and how those studies may affect selection of a route.

Response No. 4-4:

No, LCRA TSC does not have any reason to expect that the results of CREZ reactive compensation study will affect the selection of any of the 60 routes provided by LCRA TSC for the transmission line between McCamey D and Kendall (or any of the 20,000 possible other routes).

Preparer: Sergio Garza — Title: Manager, System Planning & Protection, LCRA
Co-Sponsor: Sergio Garza — Title: Manager, System Planning & Protection, LCRA
Co-Sponsor: Wayne Hicks — Title: Engineering Manager, TL Design, LCRA

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-5:

Looking at Wayne Hick's Direct Testimony at page 6 where he discusses other stations on the proposed transmission line routes, Mr. Hicks states that ETT "will own and construct series compensation station(s) somewhere along the line route between the McCamey D and Kendall stations." He also states that "the location and final arrangement of these stations is awaiting further studies by ERCOT and ETT." Please provide a copy of all communications between LCRA TSC and ETT regarding the series compensation station(s).

Response No. 4-5:

Please see the Memorandum of Understanding between LCRA TSC and ETT regarding CREZ projects, attached as Clearview Alliance_4th RFI_Q. 4-5_Attachment1.

Clearview Alliance_4th RFI_Q. 4-5_Attachment2 contains other information regarding communication between ETT and LCRA TSC regarding the series compensation associated with the McCamey D to Kendall transmission line.

Preparer: Sergio Garza — Title: Manager, System Planning & Protection, LCRA
Co-Sponsor: Sergio Garza — Title: Manager, System Planning & Protection, LCRA
Co-Sponsor: Wayne Hicks — Title: Engineering Manager, TL Design, LCRA

Memorandum of Understanding
Between LCRA TSC and ETT on CREZ Facility Responsibilities

LCRA Transmission Services Corporation (LCRA TSC) and Electric Transmission Texas (ETT) acknowledge that:

WHEREAS, LCRA TSC and ETT have each been assigned by the Public Utility Commission of Texas the responsibility to construct certain facilities associated with the Competitive Renewable Energy Zones as detailed in Finding of Fact 94.c. and Attachment B of the Order on Rehearing in Docket No. 35665 dated May 15, 2009;

NOW THEREFORE, LCRA TSC and ETT, for and in consideration of the mutual promises and agreements recited herein, agree by this Memorandum of Understanding (MOU) that, with respect to the transmission assets described below, they will perform as follows;

McCamey C Station (Bakersfield Station)

LCRA TSC will site, schedule, own, install, operate, and maintain the 345kV equipment (e.g., breakers, busses, and reactive devices), station property, grounding grid, control house, and station fence associated with the McCamey C station, excluding the breakers for the autotransformers and generation 345kV interconnections.

- LCRA TSC will acquire sufficient station property at this site to accommodate the ETT station facilities described below.

ETT will own, construct, operate, and maintain all interconnection facilities (e.g., 345 kV circuit breakers) between the stations and generation connected to the LCRA TSC McCamey C station and own, install, operate, and maintain all 138kV facilities and the 345kV breakers for the autotransformers (reference Exhibit A).

McCamey D Station (Big Hill Station)

LCRA TSC will site, schedule, own, install, operate, and maintain the 345kV equipment (e.g., breakers, busses, and reactive devices), station property, grounding grid, control house, and station fence associated with the McCamey D station, excluding the breakers for the autotransformers and generation 345kV interconnections.

- LCRA TSC will acquire sufficient station property at this site to accommodate the ETT station facilities described below.

ETT will own, construct, operate, and maintain all interconnection facilities (e.g., 345 kV circuit breakers) between the stations and generation connected to the LCRA TSC McCamey D station and own, install, operate, and maintain all 138kV facilities and the 345kV breakers for the autotransformers (reference Exhibit A).

McCamey D to Kendall 345 kV Double Circuit Transmission Line

LCRA TSC will route, schedule, own, install, operate, and maintain all the facilities associated with 345 kV double circuit transmission line between the LCRA TSC McCamey D and the Kendall stations.

- ETT will construct all future stations, switching stations, and collection stations on or near the transmission line between the McCamey D Collection Station and Junction Texas, with the exception that ETT will not construct distribution load serving stations on this transmission line between Junction, Texas and the Kimble County boundary line.
    - LCRA TSC will own, install, operate, and maintain the extra high-voltage equipment including the 345 kV breakers and necessary transmission line terminal equipment at ETT's future stations to maintain continuity of LCRA TSC's transmission line facilities between the McCamey D station and the Kendall station (reference Exhibit B) except as necessary to protect and operate the 345kV series capacitors as a separate element of protection from the line.
- LCRA TSC will construct all future stations, switching stations, and collection stations on or near the transmission line between the Kendall station and Junction, Texas.

Series Compensation on the McCamey D to Kendall 345 kV Transmission Line

ETT will own, install, operate, and maintain any series compensation on the McCamey D to Kendall 345 kV transmission line and coordinate with LCRA TSC concerning the location, design, and operation of the series compensation. Options for locating the series compensation will be developed through an ERCOT-led process.

Miscellaneous General Agreements

LCRA TSC and ETT agree by this Memorandum of Understanding that they will each be bound by the mutual obligations as follows:

1) ETT will conduct all interconnection studies with generation connecting to the McCamey C station.
2) ETT will conduct all interconnection studies with generation connecting to the McCamey D station.
3) LCRA TSC and ETT will design stations that allow LCRA TSC to maintain a continuous path for its transmission lines between McCamey D and Kendall to be relayed terminal to terminal except as necessary to protect and operate the 345kV series capacitors as a separate element of protection from the line.

4) LCRA TSC and ETT will be responsible for all aspects of ownership of their respective facilities including but not limited to the planning, operations, reliability, maintenance, tax, and regulatory obligations.

5) This MOU may be assigned by either Party to any transmission service provider Affiliate of the assigning Party with the legal authority and operational ability in Texas.

6) **NOTWITHSTANDING THE PROVISIONS OF THE FOREGOING PARAGRAPH, THE PARTIES SHALL ASSUME ALL LIABILITY FOR, AND SHALL INDEMNIFY EACH OTHER FOR, ANY LOSSES RESULTING FROM NEGLIGENCE OR OTHER FAULT IN THE DESIGN, CONSTRUCTION, OR OPERATION OF THEIR RESPECTIVE FACILITIES, TO THE MAXIMUM EXTENT ALLOWED BY LAW. SUCH LIABILITY SHALL INCLUDE A PARTY'S MONETARY LOSSES, COSTS AND EXPENSES OF DEFENDING AN ACTION OR CLAIM MADE BY A THIRD PERSON, PAYMENTS FOR DAMAGES RELATED TO THE DEATH OR INJURY OF ANY PERSON, DAMAGE TO THE PROPERTY OF THE PARTY, AND PAYMENTS FOR DAMAGES TO THE PROPERTY OF A THIRD PERSON, AND DAMAGES FOR THE DISRUPTION OF THE BUSINESS OF A THIRD PERSON. THIS PARAGRAPH DOES NOT CREATE A LIABILITY ON THE PART OF A PARTY TO A THIRD PERSON, BUT REQUIRES INDEMNIFICATION WHERE SUCH LIABILITY EXISTS. THE INDEMNIFICATION REQUIRED UNDER THIS PARAGRAPH DOES NOT INCLUDE RESPONSIBILITY FOR THE PARTY'S COSTS AND EXPENSES OF PROSECUTING OR DEFENDING AN ACTION OR CLAIM AGAINST THE OTHER, OR DAMAGES FOR THE DISRUPTION OF THE BUSINESS OF THE SERVICE PROVIDER OR CUSTOMER. THE LIMITATIONS ON LIABILITY SET FORTH HEREIN DO NOT APPLY IN CASES OF GROSS NEGLIGENCE OR INTENTIONAL WRONGDOING.**

LCRA Transmission Services Corporation

By: SERGIO GARZA FOR
Ross Phillips
Vice President & Chief Operating Officer,
LCRA Transmission Services Corporation

Date: JULY 21, 2009

Electric Transmission Texas

By: J. Calvin Crowder
Calvin Crowder
President
Electric Transmission Texas, LLC

Date: 7-27-09

Memorandum of Understanding
Between LCRA TSC and ETT on CREZ Facility Responsibilities

Exhibit A

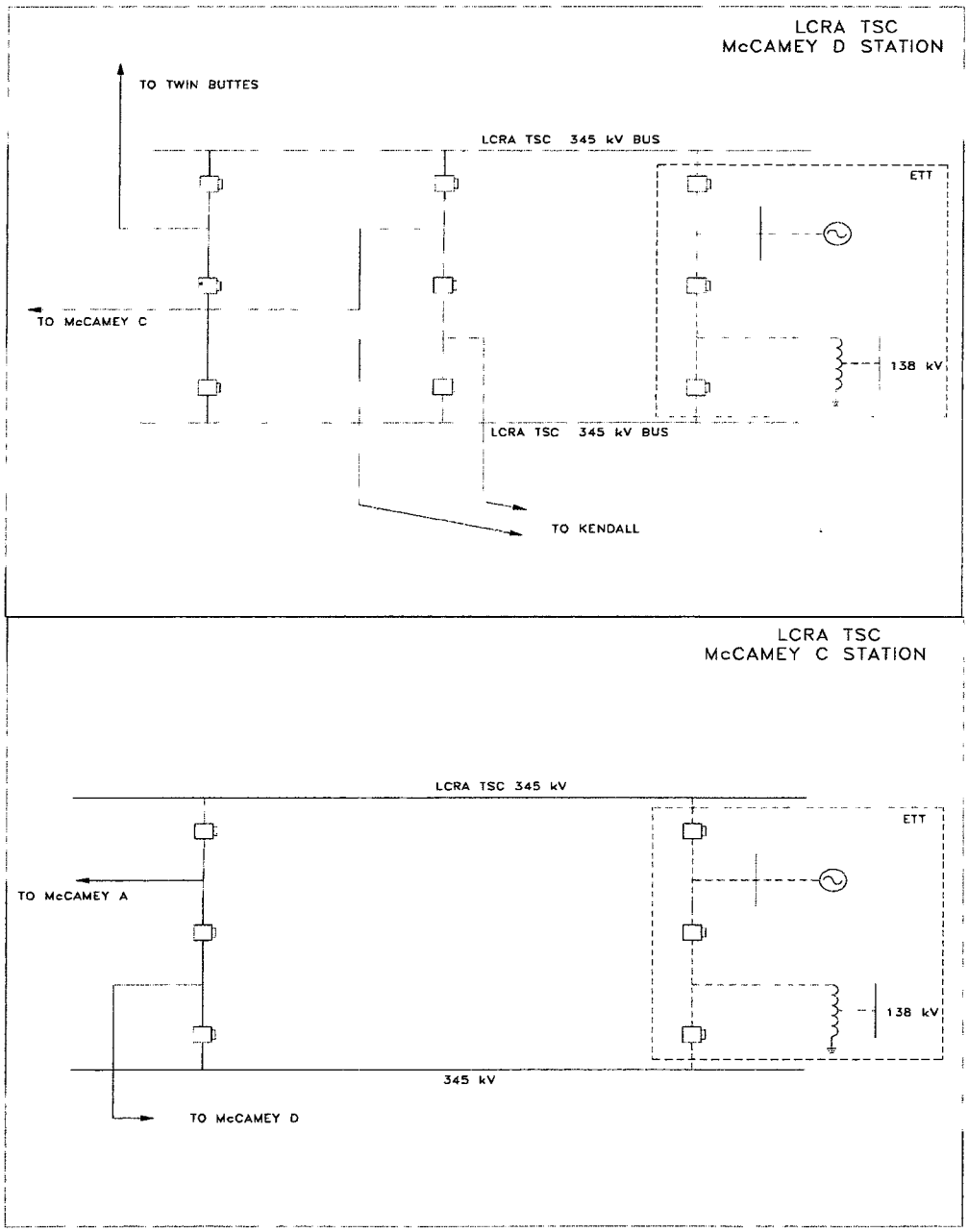


Exhibit A

Exhibit B

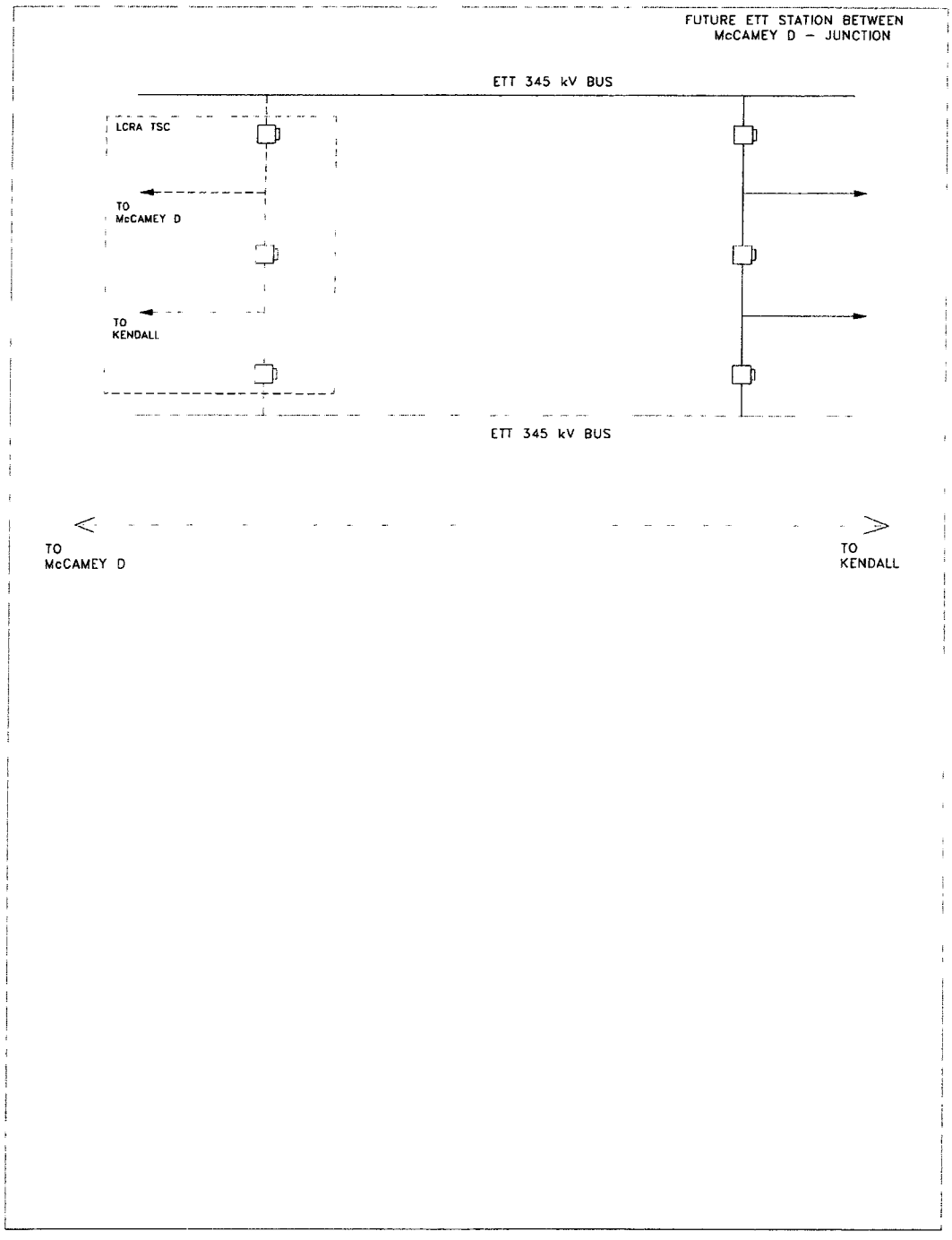


Exhibit B

Series Caps.txt

From: phassink@aep.com
Sent: Friday, May 28, 2010 12:55 PM
To: Charles DeWitt; Sergio Garza
Subject: Series Caps
Attachments: BigHill-Kendal_V12.pwb; series_cap_V12.pwd

Thanks,

Paul Hassink, Manager AEPSC Texas Transmission Planning
Phone 918/599-2653, Fax 918/599-3411, Home 918/492-1669
e-mail address, work: phassink@aep.com home: phassink@ieee.org
212 East 6th Street, Tulsa, OK 74119; POB 201, Tulsa, OK 74102

AEP Series Capacitor and Voltage Control Discussion.txt

Subject: AEP Series Capacitor and Voltage Control Discussion
Location: CR_BTC_A245

Start: Fri 5/28/2010 9:00 AM
End: Fri 5/28/2010 10:00 AM
Show Time As: Tentative

Recurrence: (none)

Meeting Status: Not yet responded

Organizer: Charles DeWitt
Required Attendees: Ami Bhanvadia; Sergio Garza; phassink@aep.com
Resources: CR_BTC_A245

AEP will be presenting their concept for a series capacitor design intended to control voltages under high line loading and low line loading conditions. They will show the effectiveness of the design using a single, two-stage series capacitor located at the mid-point of the line versus a two single stage series capacitors located with approximately 50% of the line length between the series capacitors. The concept places shunt devices at the series capacitor location to control the voltage profile of the line.

Questions to be addressed(there may be others):
1. Response speed of the shunt devices.
2. Loading limits (magnitude and duration).
3. Effect on transfer capability of the line.
4. Coordination with other reactive elements on the system.

RE Series Caps-1.txt

From: Charles DeWitt
Sent: Friday, May 28, 2010 1:00 PM
To: phassink@aep.com
Subject: RE: Series Caps

Thanks. Can you provide a succinct description of your proposal for a changing the series caps and shunts
on the Kendall to Big Hill line?

From: phassink@aep.com [mailto:phassink@aep.com]
Sent: Friday, May 28, 2010 12:55 PM
To: Charles DeWitt; Sergio Garza
Subject: Series Caps

Thanks,

Paul Hassink, Manager AEPSC Texas Transmission Planning
Phone 918/599-2653, Fax 918/599-3411, Home 918/492-1669
e-mail address, work: phassink@aep.com home: phassink@ieee.org
212 East 6th Street, Tulsa, OK 74119; POB 201, Tulsa, OK 74102

RE Series Caps.txt

From: Charles DeWitt
Sent: Friday, May 28, 2010 3:10 PM
To: phassink@aep.com
Cc: Sergio Garza
Subject: RE: Series Caps

Thank you for clarifying the request that you will make to ABB. We will be interested in ABB's and ERCOT's
response once you have submitted the request.

From: phassink@aep.com [mailto:phassink@aep.com]
Sent: Friday, May 28, 2010 1:43 PM
To: Charles DeWitt
Subject: RE: Series Caps

To ensure that ABB studies capture the characteristics of the ETT series capacitors, as currently being
developed by AEPSC, AEPSC will provide to ERCOT/ABB new models for the ETT series capacitors,
including segmentation of the Big Hill to Kendal line series capacitors with one 25% segment at a point
25% of the way from Big Hill to Kendal and the remaining 25% in its current location 50% of the way
from Big Hill to Kendal. The terminals of the series capacitor segments will include provisions for shunt
capacitors and reactors.

Thanks,

Paul Hassink, Manager AEPSC Texas Transmission Planning
Phone 918/599-2653, Fax 918/599-3411, Home 918/492-1669
e-mail address, work: phassink@aep.com home: phassink@ieee.org
212 East 6th Street, Tulsa, OK 74119; POB 201, Tulsa, OK 74102

Charles DeWitt <Charles.DeWitt@LCRA.ORG>
05/28/2010 12:59 PM
To
"phassink@aep.com" <phassink@aep.com>
cc

Subject
RE: Series Caps

Thanks. Can you provide a succinct description of your proposal for a changing the series caps and shunts on
the Kendall to Big Hill line?

From: phassink@aep.com [mailto:phassink@aep.com]
Sent: Friday, May 28, 2010 12:55 PM
To: Charles DeWitt; Sergio Garza
Subject: Series Caps

Thanks,

RE Series Caps.txt

Paul Hassink, Manager AEPSC Texas Transmission Planning
Phone 918/599-2653, Fax 918/599-3411, Home 918/492-1669
e-mail address, work: phassink@aep.com home: phassink@ieee.org
212 East 6th Street, Tulsa, OK 74119; POB 201, Tulsa, OK 74102

RE Two Requests for CREZ Reactive Plan.txt

From: Charles DeWitt
Sent: Wednesday, July 21, 2010 9:06 AM
To: 'phassink@aep.com'; ccarter@ercot.com
Cc: dwoodfin@ercot.com; jrose@ercot.com; wlasher@ercot.com; smdsouza@aep.com; sgpatel@aep.com; camatthes@aep.com; llyork@aep.com; mmacias@aep.com; jdpulay@aep.com; jjberger@aep.com; rwbradish@aep.com; rwbradish@aep.com; KDonoho1@oncor.com; TCook@LSPOWER.COM
Subject: RE: Two Requests for CREZ Reactive Plan
Attachments: 07202010 LineImpedances.xlsx

The attached file contains line impedances for each segment of the Big Hill to Kendall Line created by the series capacitor arrangement proposed by AEP. The impedances were recalculated for a minimum length (128 miles), a typical length (134 miles), and a long length (166 miles).

The file also contains an update to the impedance of the Twin Buttes to Big Hill Line resulting from the approved CCN. The approved route is approximately 38 miles versus the 30 miles which was used to estimate impedances at the beginning of the study.

From: phassink@aep.com [mailto:phassink@aep.com]
Sent: Tuesday, July 20, 2010 7:31 AM
To: ccarter@ercot.com
Cc: dwoodfin@ercot.com; jrose@ercot.com; wlasher@ercot.com; smdsouza@aep.com; sgpatel@aep.com; camatthes@aep.com; llyork@aep.com; mmacias@aep.com; jdpulay@aep.com; jjberger@aep.com; rwbradish@aep.com; rwbradish@aep.com; Charles DeWitt; KDonoho1@oncor.com; TCook@LSPOWER.COM
Subject: Re: Two Requests for CREZ Reactive Plan

Please find attached the changes to be applied to the posted CREZ cases (prepared by ABB), which represent AEPSC's proposal for the implementation of the ETT facilities.

Specifically, AEPSC proposes that the ETT series capacitors on the Edith Clarke to Clear Crossing and Dermott to Clear Crossing 345 kV lines should be rated for 3200 A continuous, but ultimately capable of 3600 A continuous. The impedance of the series capacitors should be 24 ohms and the location of the installations should be at roughly in the middle of the respective lines. The series capacitors on the Big Hill to Kendal 345 kV line should be rated 3600 A continuous. Segmentation of the series capacitor should be utilized, with one 24 ohm segment located at roughly 25% of the distance from Big Hill to Kendal and the second segment of 24 ohms located at roughly in the middle of the line. The rationale for this design can be found in my emails dated 3/10/10 and 6/1/10. In order to specify and order series capacitors, SSR mitigation must be resolved.

Additional updates to the CREZ facilities to be implemented by ETT include standardized shunt compensation. Capacitor banks to be installed by ETT are standardized at 144 MVar and located in

RE Two Requests for CREZ Reactive Plan.txt

To
"Hassink, Paul" <phassink@aep.com>
CC
"Lasher, Warren" <wlasher@ercot.com>
Subject
Two Requests for CREZ Reactive Plan

Hello Paul,
ERCOT staff would like ETT's response to the following:

1. Based on the attached table from ABB, what ampacity do you propose for your series capbanks?
2. What additional information do you need to complete your purchases?

We would like to approve (or disapprove) all the series capacitor ratings as soon as possible.

Thank you,
Cathey Carter
ccarter@ercot.com

----- Forwarded by Joseph P Hassink/AEPIN on 07/15/2010 11:42 AM -----
Joseph P Hassink/AEPIN
06/01/2010 06:54 AM
To
CREZ_TSP@LISTS.ERCOT.COM
CC
Glen A Reed/AEPIN@AEPIN, Steven M D'Souza/AEPIN@AEPIN, Vance Y Beauregard/AEPIN@AEPIN, Larry E Anderson/AEPIN@AEPIN, Michael M Macias/AEPIN@AEPIN, Leo L York/AEPIN@AEPIN, James J Berger/AEPIN@AEPIN, Ben Mehraban/OR2/AEPIN@AEPIN
Subjec
t
Re: Revised Section on Minimum Exports CaseLink

These results are very helpful in determining shunt reactor siting. As the study continues to move
forward, evolving base case assumptions need to captured, so that the cumulative result of the study
reflects ERCOT's best effort at an efficient and practical implementation of the CREZ plan. To that end,
AEPSC proposes to supply several modeling refinements intended to reflect the physical equipment that
would be installed.

The standard size for an ETT 345 kV shunt reactor is 100 MVar, and maintaining multiple sizes will
require additional spares resulting in higher costs. The subject analysis proposed the addition of 125
MVar and 2x25 MVar at Clear Crossing and Edison, respectively. The CTOS also designated 200 MVar

RE Two Requests for CREZ Reactive Plan.txt

To
"Hassink, Paul" <phassink@aep.com>
cc
"Lasher, Warren" <wlasher@ercot.com>
Subject
Two Requests for CREZ Reactive Plan

Hello Paul,
ERCOT staff would like ETT's response to the following:

1. Based on the attached table from ABB, what ampacity do you propose for your series capbanks?
2. What additional information do you need to complete your purchases?

We would like to approve (or disapprove) all the series capacitor ratings as soon as possible.

Thank you,
Cathey Carter
ccarter@ercot.com

----- Forwarded by Joseph P Hassink/AEPIN on 07/15/2010 11:42 AM -----
Joseph P Hassink/AEPIN
06/01/2010 06:54 AM
To
CREZ_TSP@LISTS.ERCOT.COM
cc
Glen A Reed/AEPIN@AEPIN, Steven M D'Souza/AEPIN@AEPIN, Vance Y Beauregard/AEPIN@AEPIN, Larry E Anderson/AEPIN@AEPIN, Michael M Macias/AEPIN@AEPIN, Leo L York/AEPIN@AEPIN, James J Berger/AEPIN@AEPIN, Ben Mehraban/OR2/AEPIN@AEPIN
Subjec
t
Re: Revised Section on Minimum Exports CaseLink

These results are very helpful in determining shunt reactor siting. As the study continues to move
forward, evolving base case assumptions need to captured, so that the cumulative result of the study
reflects ERCOT's best effort at an efficient and practical implementation of the CREZ plan. To that end,
AEPSC proposes to supply several modeling refinements intended to reflect the physical equipment that
would be installed.

The standard size for an ETT 345 kV shunt reactor is 100 MVar, and maintaining multiple sizes will
require additional spares resulting in higher costs. The subject analysis proposed the addition of 125
MVar and 2x25 MVar at Clear Crossing and Edison, respectively. The CTOS also designated 200 MVar

pairs a Riley, Tesla and Edith Clarke substations. This varies in size and location of shunt capacitors
modeled in the study, but the differences are limited and do not change the overall compensation level.
Line connected shunt reactors are needed to energize the long CREZ lines with a substantial amount of
charging. AEPSC analysis determined that 200 MVar of reactors on four lines at 50 MVar each are
necessary each at Riley, Tesla and Edith Clarke. 300 MVar of line shunt reactors at 50 MVar each are
necessary at Clear Crossing and two 100 MVar line shunt reactors, one on each line at the Edison
series capacitors.

These updates reflect the state of the current CREZ build out for the ETT facilities, and AEPSC
anticipates that further progress of the ABB Reactive Study will support this configuration.

Thanks,

Paul Hassink, Manager AEPSC West Transmission Planning
Phone 918/599-2653 (0# for cell), Fax 918/599-3323
e-mail address: phassink@aep.com
212 East 6th Street, Tulsa, OK 74119; POB 201, Tulsa, OK 74102

----- Forwarded by Joseph P Hassink/AEPIN on 07/20/2010 07:27 AM -----
Steven M D'Souza/AEPIN
07/19/2010 04:31 PM
To
Joseph P Hassink/AEPIN@AEPIN
cc

Subject
Re: FW: Two Requests for CREZ Reactive PlanLink

Paul,

Attached is the IDV with the capacitor changes you requested along with an updated document
explaining those changes. Please let me know if you need anything else.

Thanks,

Steven D'Souza
Texas Transmission Planning
American Electric Power
Phone: 918-599-2624
Fax: 918-599-3411
Email: smdsouza@aep.com
Mail Address: P. O. Box 201, Tulsa, OK 74102-0201
Street Address: 212 East Sixth Street, Tulsa, OK 74119

----- Forwarded by Joseph P Hassink/AEPIN on 07/15/2010 11:24 AM -----
"Carter, Cathey" <ccarter@ercot.com>
07/08/2010 04:05 PM

capacitors and will determine if
50% compensation should be split into smaller segments that constrain the voltage change across the
capacitor to an acceptable level under contingency power flows.

AEPSC offers the following approach to address the design of CREZ series capacitors:

Determine a two hour rating for series capacitors based on an ultimate utilization capacity of the
associated circuit. ABB's analysis maximizing power flow under single contingency conditions on the
Big Hill to Kendal series capacitors demonstrated that utilization up to 4000 a can be achieved stably.
While circuits may be rated for 5000 a, power flows at that level are likely to create unstable conditions.

Determine the maximum series capacitor impedance that for the desired rating will produce the
maximum acceptable voltage change across the capacitor. Roughly a 5% voltage change will occur for
4000 a of flow through a 20 ohm series capacitor. So if the low voltage side of the series capacitor is
maintained at unity voltage, the high voltage side would be operating at 105%. If there is much more
voltage change across a series capacitor, it will be very difficult to maintain voltages on the low voltage
side that will not stress the high voltage side. This is particularly a problem when the segments are not
separated by enough line impedance, and the sum of the voltage changes add up to 10%.

Determine the placement of fixed ohm series capacitor segments of the desired rating. The impedance
of the proposed 50% compensation on the CREZ lines varies from approximately 25 ohms to 55 ohms,
depending on the length of the compensated line. There is nothing technically constraining the CREZ
plan to specific ohmic values for the series capacitors, so the placement of 20 ohm segments for
example may reduce short line series compensation by 5 ohms and could result in over compensating
long lines with an additional 5 ohms. Stability analysis should render insights as where series
compensation can best be allocated to increase transfer capability margins.

Considerations should be given to the initial capacity of fixed ohm series capacitor. As the CREZ
system evolves there may be significant periods before maximum utilization of the desired rating is
achieved. It may be possible to leave out some parallel strings of series capacitors for lower initial
capacity needs and similarly defer some MOVs due to lower fault duties prior to the interconnection of
synchronous generation nearby.

Further consideration should be given to the topology impact of fully connecting the Clear Crossing
substation. As a direct result of the substation, four long circuits become six less long circuits and two
short circuits. The altered topology will likely result redistribution of the series compensation of and
possibly an overall change in the total amount of series compensation. Ultimately,

the resulting reconfiguration will likely enhance stability of the system, due to greater connectivity and targeted placement of series compensation. The building block approach of fixed ohm series capacitors enables resolution of the reactive study by limiting the combinations of segments, particularly if redistribution is necessary with the introduction of the Clear Crossing substation.

Finally, another important consideration regarding the placement of the series capacitor segments is the determination of locations that account for both the line voltage profile and the potential for generation collection substations. Given that series compensated lines are long, there is every likelihood that generation requesting interconnection will be remote to CREZ substations. Since it is necessary to insert impedance between series capacitor segments to minimize voltage profile violations, segments will also be remote to the CREZ substations. By strategically placing the series capacitors, it may be possible to achieve both a healthy voltage profile and a cost effective collection substation.

Thanks,

Paul Hassink, Manager AEPSC Texas Transmission Planning
Phone 918/599-2653, Fax 918/599-3411, Home 918/492-1669
e-mail address, work: phassink@aep.com home: phassink@ieee.org
212 East 6th Street, Tulsa, OK 74119; POB 201, Tulsa, OK 74102

Series Capacitors.txt

From: phassink@aep.com
Sent: Thursday, May 27, 2010 4:52 PM
To: Sergio Garza; Charles DeWitt
Cc: dekidd@aep.com; sgpatel@aep.com
Subject: Series Capacitors
Attachments: MoveSeriesCapsAtEdison_14SUM.idv; AddShuntCap&Reactors_14SUM.idv; BigHill-KendallBefore.sld; BigHill-KendallAfter.sld

Attached is the Webex information for the call tomorrow at 9am. Just call my office from your location
and log into the Webex.

Steven prepared the IDEV (see below) to model the Series Capacitors.

Thanks,

Paul Hassink, Manager AEPSC Texas Transmission Planning
Phone 918/599-2653, Fax 918/599-3411, Home 918/492-1669
e-mail address, work: phassink@aep.com home: phassink@ieee.org
212 East 6th Street, Tulsa, OK 74119; POB 201, Tulsa, OK 74102

----- Forwarded by Joseph P Hassink/AEPIN on 05/27/2010 04:41 PM -----

Paul Hassink invites you to attend this online meeting.

Topic: AEP/LCRA Meeting
Date: Friday, May 28, 2010
Time: 8:30 am, Central Daylight Time (Chicago, GMT-05:00)
Meeting Number: 339 184 264
Meeting Password: Transmission123

To join the online meeting (Now from iPhones too!)
---
1. Go to
https://aep2.webex.com/aep2/j.php?ED=128816272&UID=1044583492&PW=NZGFlMTFjYzYz&RT=Mi
M
3
2. If requested, enter your name and email address.
3. If a password is required, enter the meeting password: Transmission123
4. Click "Join".

To view in other time zones or languages, please click the link:
https://aep2.webex.com/aep2/j.php?ED=128816272&UID=1044583492&PW=NZGFlMTFjYzYz&ORT=M
i
M3

----- Forwarded by Joseph P Hassink/AEPIN on 05/27/2010 04:41 PM -----
Steven M D'Souza/AEPIN
05/27/2010 04:30 PM
To
Joseph P Hassink/AEPIN@AEPIN
cc

Subject
Big Hill to Kendall IDVs

Series Capacitors.txt

Paul,

Attached are the IDVs I created to move the series capacitors and add shunt capacitors and reactors on
the Big Hill to Kendall 345 kV line. The IDV to move the series capacitors must be run before the IDV to
add the shunt capacitors and reactors. I have included sliders which show the topology before and after
the IDVs are run on the posted DSB 14SUM case. The posted DSB 13SUM case did not have the Big
Hill to Kendall 345 kV lines. Also, the series capacitors bypasses are closed in. This must be due to
the high voltages in the cases. Please let me know if you have any questions.

Thanks,

Steven D'Souza
Texas Transmission Planning
American Electric Power
Phone: 918-599-2624
Fax: 918-599-3411
Email: smdsouza@aep.com
Mail Address: P. O. Box 201, Tulsa, OK 74102-0201
Street Address: 212 East Sixth Street, Tulsa, OK 74119

All impedances are in per unit on 100 MVA base.
Line lengths are in miles.

	kV	Ckt	From	From Bus	To	To Bus	R1	X1	B1	R0	X0	Length	DATA
128 miles	345	1	76003	BIG HILL	60708	EDISON25%	0.000809	0.015253	0.290189	0.008924	0.04632	32.082	L
	345	1	60709	EDISON25%	60616	EDISON50%	0.000809	0.015253	0.290189	0.008924	0.04632	32.082	L
	345	1	60618	EDISON50%	7046	KENDAL34	0.00161	0.030439	0.581011	0.017713	0.092327	64.165	L
	345	2	76003	BIG HILL	60710	EDISON25%	0.000807	0.015261	0.290089	0.008964	0.04667	32.082	L
	345	2	60711	EDISON25%	60619	EDISON50%	0.000807	0.015261	0.290089	0.008964	0.04667	32.082	L
	345	2	60621	EDISON50%	7046	KENDAL34	0.001608	0.030455	0.580811	0.017793	0.093023	64.165	L
134 Miles	345	1	76003	BIG HILL	60708	EDISON25%	0.000844	0.015925	0.303021	0.009316	0.048362	33.5	L
	345	1	60709	EDISON25%	60616	EDISON50%	0.000844	0.015925	0.303021	0.009316	0.048362	33.5	L
	345	1	60618	EDISON50%	7046	KENDAL34	0.00168	0.031775	0.606762	0.018479	0.096367	67	L
	345	2	76003	BIG HILL	60710	EDISON25%	0.000843	0.015934	0.302916	0.009358	0.048727	33.5	L
	345	2	60711	EDISON25%	60619	EDISON50%	0.000843	0.015934	0.302916	0.009358	0.048727	33.5	L
	345	2	60621	EDISON50%	7046	KENDAL34	0.001678	0.031793	0.606552	0.018562	0.097094	67	L
166 Miles	345	1	76003	BIG HILL	60708	EDISON25%	0.001048	0.019772	0.376459	0.011554	0.06003	41.61	L
	345	1	60709	EDISON25%	60616	EDISON50%	0.001048	0.019772	0.376459	0.011554	0.06003	41.61	L
	345	1	60618	EDISON50%	7046	KENDAL34	0.00208	0.0394	0.754301	0.022815	0.119377	83.22	L
	345	2	76003	BIG HILL	60710	EDISON25%	0.001046	0.019783	0.37633	0.011606	0.060483	41.61	L
	345	2	60711	EDISON25%	60619	EDISON50%	0.001046	0.019783	0.37633	0.011606	0.060483	41.61	L
	345	2	60621	EDISON50%	7046	KENDAL34	0.002077	0.039422	0.754042	0.022917	0.120275	83.22	L
Certificated Length	345	564	76009	TWBT7	76003	BIG HILL	0.000963	0.018231	0.344044	0.009777	0.057858	38.35	L

Sergio Garza

From: phassink@aep.com
Sent: Friday, July 17, 2009 10:34 AM
To: dmatthews@aep.com
Cc: Julius Horvath; Sergio Garza
Subject: Fw: Series Capacitor in the CREZ McCamey D-Kendal Line
Attachments: McCamey-Kendal Series Cap.JPG

I am including Julius, who manages transmission planning for LCRA.

Thanks,

Paul Hassink, Manager AEPSC Texas Transmission Planning
Phone 918/599-2653, Fax 918/599-3411, Home 918/492-1669
e-mail address, work: phassink@aep.com home: phassink@ieee.org
212 East 6th Street, Tulsa, OK 74119; POB 201, Tulsa, OK 74102

---- Forwarded by Joseph P Hassink/AEPIN on 07/17/2009 10:30 AM ----
David Matthews/AEPIN

07/17/2009 10:24 AM

To Sergio.Garza@LCRA.ORG
cc Joseph P Hassink/AEPIN@AEPIN, Rue F Galyean/AEPIN@AEPIN
Subject Series Capacitor in the CREZ McCamey D-Kendal Line

Hi Sergio,

I would like to coordinate our data submission for the CREZ reactive study with someone at LCRA. Should AEP submit the data for the McCamey D-Kendal series capacitor in the IDEV to be sent to ERCOT for the reactive study?

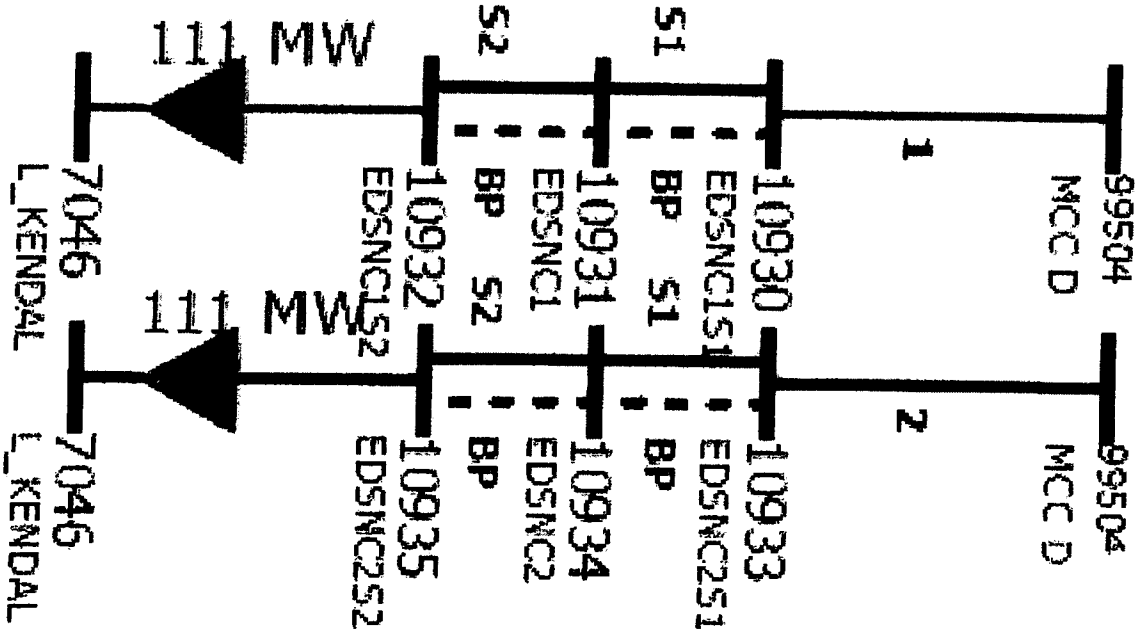
We are modeling the ETT series caps as two 25% segments with bypass switches around the middle 1/3 of the line. The middle of a line seems to be the best starting point for locating series capacitors. Modeling the series capacitor banks eliminates the need to adjust the line X by the amount of compensation. Two segments allow us to test different combination of levels of compensation.

Do you want AEP to include a 50% LTAP in the CREZ McCamey D-Kendal Line with a series capacitor modeled as describe above? The attached drawing shows the cap modeled the same way AEP modeled the other banks. Cathy Carter supplied a temporary bus number range to AEP for use in this study and the bus numbers for the series caps are in this range.

David Matthews
Texas Transmission Planning

American Electric Power
Street Address – 212 East Sixth Street, Tulsa, Oklahoma, 74119-1295
Mail Address – Post Office Box 201, Tulsa, Oklahoma, 74102-0201
Phone – 918 – 599 – 2638
Fax – 918 – 599 – 3323

E-mail – **dmatthews@aep.com**


111 MW
111 MW
7046
L_KENDAL
7046
L_KENDAL
10932
EDSNC1S2
10935
EDSNC2S2
10931
EDSNC1
BP S2
10934
EDSNC2
BP
S2
S1
10930
EDSNC1S1
BP S1
10933
EDSNC2S1
BP
1
2
99504
MCC D
99504
MCC D

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-6:

Looking at Wayne Hick's Direct Testimony at page 9 where he discusses the Kendall substation, Mr. Hicks states that "the third 345-kV circuit is a generation interconnect to the NextEra wind generation facilities." Please state whether the interconnect referred to is the 345-kV line built by Horse Hollow Generation Tie, LLC. If it is not, please identify the ownership of the circuit to which his testimony refers.

Response No. 4-6:

The NextEra generation interconnect at Kendall is the Horse Hollow Generation Tie.

Preparer: Wayne Hicks Title: Engineering Manager, TL Design, LCRA
Sponsor: Wayne Hicks Title: Engineering Manager, TL Design, LCRA

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-7:

To the best of LCRA TSC's knowledge, if LCRA were to acquire ownership of or a right to use the 345pkV line built by Horse Hollow Generation Tie, LLC, would modifications to the Kendall substation be necessary? If so, please list and describe those modifications and state how they are different, if they are, from the modifications anticipated in Mr. Hick's Direct Testimony.

Response No. 4-7:

According to the Preliminary Order in this case and statements from the Public Utility Commission, the issue of whether LCRA TSC might acquire ownership of the Horse Hollow Generation Tie is not to be tried in this proceeding.

The Horse Hollow Generation Tie line from Sweetwater near Abilene actually terminates in the NextEra Omega station adjacent to Kendall Station. The transmission line between the Omega and Kendall stations is approximately 1000 feet long. No changes would be anticipated for the termination of this short existing line at the Kendall Station, assuming that no major changes would be required to generation tie between Sweetwater and the Omega Station. LCRA TSC has no information regarding the design, configuration, or construction of the Omega Station and thus cannot opine as to the necessity of modifications to that station.

Preparer: Wayne Hicks — Title: Engineering Manager, TL Design, LCRA
Sponsor: Wayne Hicks — Title: Engineering Manager, TL Design, LCRA

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-8:

Looking at Wayne Hick's Direct Testimony at page 9 where he discusses the Kendall substation, Mr. Hicks states that "the options for further development at the Kendall Station are becoming more constrained." Please list and describe the constraints, if any, at the Kendall Station that would prevent LCRA from acquiring an ownerhsip interest in or a right to use the 345 kV line built by Horse Hollow Generation Tie, LLC and state whether these constraints could be mitigated or eliminated.

Response No. 4-8:

According to the Preliminary Order in this case and statements from the Public Utility Commission, the issue of whether LCRA TSC might acquire ownership of the Horse Hollow Generation Tie is not to be tried in this proceeding.

Please see the answer to 4-7.

Preparer: Wayne Hicks — Title: Engineering Manager, TL Design, LCRA
Sponsor: Wayne Hicks — Title: Engineering Manager, TL Design, LCRA

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-9:

Has PBS&J prepared or provided to LCRA TSC any assessments, evaluations, conclusions, analyses or review of the proposed transmission line project for consistency with local, county, municipal, state (including any state agencies), or federal (including any federal agencies) land use planning standards or recommendations? If so, please provide copies of all documents reflecting what PBS&J prepared or provided to LCRA TSC.

Response No. 4-9:

Beyond the EA itself, PBS&J has not prepared any analyses of local, county, municipal, state or federal land use planning standards. Consistency with applicable laws and regulations is addressed throughout the EA.

PBS&J and LCRA TSC contacted applicable federal, state, and local agencies by letter, including city and county officials, seeking their input on the project. The letters asked for identification of any approvals and/or permits that could affect the project, as well as current or proposed land development projects, construction projects, or other areas of interest. This information has been provided in Section 6.1.2 of the EA. Please see Appendix F of the EA, for sample letters sent to agencies and their responses.

Co-Preparer: Brian Macik	Title: Planner II, PBS&J
Co-Preparer: Rob Reid	Title: Vice President/Principal Project Director, PBS&J
Co-Sponsor: Rob Reid	Title: Vice President/Principal Project Director, PBS&J
Co-Sponsor: Sara Morgenroth	Title: Senior Regulatory Case Manager, LCRA

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-10

Has LCRA TSC or any of its consultants prepared any plans that address how LCRA TSC, its contractors or subcontractors will address the environmental impact of the construction activities associated with construction of the proposed transmission line? If so, please provide copies of such plans.

Response No. 4-10:

Please see the Chapter 1 of the EA, and also page 10, line 7 through page 11, line 5 and page 28, line 19, through page 30, line 8 of the Direct Testimony of Curtis Symank. Precise plans cannot be formulated until a route has been approved by the Commission.

Preparer: Curtis Symank Title: Engineering Supervisor, LCRA
Sponsor: Curtis Symank Title: Engineering Supervisor, LCRA

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-11:

Please provide a copy of all documents containing LCRA TSC's directives, instructions, requirements, guidelines, and advisories provided to its contractors and subcontractors regarding the removal of limbs and branches of live oak trees (i) during tree trimming performed for existing transmission lines and (ii) during the clearing of right-of-way for the construction of transmission lines.

Response No. 4-11:

(i) LCRA TSC's Oak Wilt Policy is used as a guide for all trimming or removal of oak trees. This policy is attached as CVA_4th_RFI_Q4-11 Attachment 1.

(ii) LCRA TSC's Right Of Way Management Plan is also provided to contractors. This document is voluminous and can be viewed by contacting Gina Eddy or Janet McNutt at 512-473-3287 to make an appointment.

In addition to these generally applicable documents, each project is reviewed in detail and project specific requirements are generated as the controlling documents for activities on that project. Such documents are detailed design documents, which will be generated for the route ordered constructed by the Commission.

Co-Preparer: Curtis Symank — Title: Engineering Supervisor, LCRA
Co-Preparer: Ken Barnard — Title: Line Operations Manager, LCRA
Co-Preparer: Erik Huebner — Title: Senior Environmental Coordinator, LCRA

Co-Preparer: Rob Seiler	Title: Project Management Manager, LCRA
Sponsor: Curtis Symank	Title: Engineering Supervisor, LCRA

ENERGY • WATER • COMMUNITY SERVICES

Policy – Corporate Environmental
Title: Oak Wilt Prevention

1.0 Purpose

The purpose of this Lower Colorado River Authority (LCRA) Oak Wilt Prevention Policy is to document measures that must be implemented to prevent the spread of oak wilt while handling oak trees.

2.0 Definitions

Oak Wilt: A tree disease caused by the fungus, *Ceratocystis fagacearum.* The fungus infects the conductive tissue (xylem) of the tree, which contains vessels that transport moisture throughout the tree. The oak wilt fungus causes the infected tree to produce tylosis. The production of tylosis becomes so significant that the tree can no longer transport water throughout its vascular system. The end result, in most cases, is tree mortality.

3.0 Prevention Policy

3.1 Any person representing LCRA (from here on "LCRA representative") who is involved in field work where oak trees are trimmed, removed, or could be potentially wounded shall receive initial oak wilt training as well as annual refresher trainings. LCRA representatives required to have training would include, but is not limited to, project managers, construction managers, environmental staff, equipment operators, contractors, subcontractors, and volunteers. Training must be received before field work may begin in areas with oak trees. Those working with oak trees shall complete the LCRA Oak Wilt Prevention Report as well. This report will be discussed and distributed during training sessions.

3.2 When possible, oak trees should not be trimmed or pruned between February and June.

3.3 At all times, sterilization of equipment and painting of wounds are mandatory when trimming or pruning susceptible species.

3.4 Sterilization of tree removal and trimming equipment will occur before leaving the project area or between property boundaries and will involve using either aerosol disinfectant or a ten (10) percent bleach-water solution. In addition, tree trimming equipment must be sterilized thoroughly before it is used again.

3.5 Irrespective of limb size, all cuts and wounds must be painted with a wound or latex-based paint or a product approved by a Certified Arborist who has obtained an Oak Wilt Specialist Certification or recommended by the Texas Forest Service. Such painting will include stump-cuts and damaged roots both above and below ground. Because it takes only a few minutes for an open tree wound to attract insects, waiting to paint until all pruning is accomplished is unacceptable. Wound protection must be applied immediately.

3.6 At a minimum, LCRA representative will seal all wounds (any size) of all oak trees. However, LCRA representative may elect to seal cuts of all hard wood trees on a case-by-case basis.

4.0 Disposal Policy

4.1 Chipping or shredding the wood from infected trees to use as mulch is an acceptable means of recycling the wood. Chipping or shredding allows the wood to dry out quickly, thereby killing the fungus.

4.2 Burning diseased wood is an acceptable means of disposal. Burning diseased logs kills the oak wilt fungus; in addition, the fungus does not spread with smoke.

4.3 Firewood from diseased trees should not be stored near healthy trees because fungal spores or insects which carry the spores have the potential to spread the fungus. If the brush or logs are to be left for firewood, the LCRA representative must explain to the land owner or land owner's representative that the brush or logs may be infected and warn them of the hazards associated with storage. LCRA representatives may fulfill this landowner notification obligation by providing pertinent information in 4.3 or 4.4 of this policy to the land owner or landowner's representative. Logs over four (4) inches or ten (10) centimeters in diameter at breast height must be girdled (bark removed), as fungal mats have been found on logs this size and larger after the tree has been felled.

4.4 It is recommended to store oak firewood under a sheet of clear plastic and tightly seal the edges of the plastic with soil or bricks. Doing so will prevent any spore-carrying beetles from escaping. It is also important to use clear plastic, as black plastic will reveal any escape holes to the beetles.

4.5 Unused disinfectants and paints must be recycled or disposed of properly. Material Safety Data Sheets (MSDSs) are required and must be attached to the LCRA Oak Wilt Prevention Report for each paint and disinfectant used.

Approved: H. E. E.
Henry Eby, Manager, Environmental Affairs

LCRA Oak Wilt Prevention Report

Oak wilt is a tree disease caused by a fungus which in most cases kills the tree. To help prevent the spread of oak wilt LCRA's Corporate Oak Wilt Policy states that **all wounds made to oak trees must be painted as soon as the wound is created** with a wound or latex-based paint or a product approved by a Certified Arborist who has obtained an Oak Wilt Specialist Certification or as directed by the Texas Forest Service. Sterilization of tree removal and trimming equipment must occur before leaving the project area or between property boundaries and must involve using either aerosol disinfectant or a ten (10) percent bleach-water solution. **Tools must be disinfected between trees if pruning adjacent to oak wilt infested areas.** In addition, trimming equipment must be sterilized thoroughly before it is used again. If mechanical clearing occurs using a device such as a flail mower, one must ensure that stumps are painted.

Please fill out the following report to ensure compliance with LCRA's Oak Wilt policy.

Date	**Project Location** *(e.g. TL #, substation, park, etc.)*	**County**	**Land Parcel #** *(if known)*	**Structures** *(if applicable)*	**Type of Paint used** *(attach MSDS)*	**Color of Paint***	**# of Oak Trees Painted**	**Type of Disinfectant Used** *(circle one)*
								Aerosol / 10% bleach solution
								Aerosol / 10% bleach solution
								Aerosol / 10% bleach solution
								Aerosol / 10% bleach solution
								Aerosol / 10% bleach solution
								Aerosol / 10% bleach solution
								Aerosol / 10% bleach solution
								Aerosol / 10% bleach solution

**It is highly recommended that a dark-colored paint (black or brown) be used. Marking and other types of paints that fade easily are not recommended.*

Workers Name (printed):_____ Company: _____

Workers Signature: _____ Date: _____

Please return to your LCRA Environmental Representative

Revision Date: August 27, 2009

Document Control and Records Maintenance

Version	Date	Author	Change(s) Made
1	June 29, 2006	Jobaid Kabir	Original
2	August 27, 2009	Henry Eby	Updates; LCRA Oak Wilt Prevention Report added to Policy.

SOAH DOCKET NO. 473-10-5546
PUC DOCKET NO. 38354

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE MCCAMEY D TO KENDALL TO GILLESPIE 345-KV CREZ TRANSMISSION LINE IN SCHLEICHER, SUTTON, MENARD, KIMBLE, MASON, GILLESPIE, KERR, AND KENDALL COUNTIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-12:

Please provide a copy of all documents containing LCRA TSC's directives, instructions, requirements, guidelines, and advisories provided to its contractors and subcontractors regarding the removal of live oak trees during the clearing of right-of-way for the construction of transmission lines.

Response No. 4-12:

Please refer to the answer to Question 4-11 above.

Preparer: Curtis Symank — Title: Engineering Supervisor, LCRA
Sponsor: Curtis Symank — Title: Engineering Supervisor, LCRA

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LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-13:

Please provide a copy of all documents containing LCRA TSC's directives, instructions, requirements, guidelines, and advisories provided to its contractors and subcontractors regarding the removal of trees other than live oaks during the clearing of right-of-way for the construction of transmission lines.

Response No. 4-13:

Please refer to the answer to Question 4-11 above.

Preparer: Curtis Symank — Title: Engineering Supervisor, LCRA
Sponsor: Curtis Symank — Title: Engineering Supervisor, LCRA

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LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-14:

Please list and describe in general terms the sequence of events that takes place beginning with the date on which LCRA TSC's contractor seeks permission to survey for an easement until completion of construction of a 345 kV line on a landowner's property. This Request does not seek any information regarding negotiating or acquiring the easement. The purpose of this Request is to understand the general process and timing of the surveying, clearing of right-of-way, disposal of trees and other debris, construction of the supporting structure and line, and the restoration (including seeding) of the affected land. For purposes of your response, please assume that there is no habitable structure within 1000 feet of the route for the line, that the property is located on a paved two-lane road with no shoulders, that the line will be located parallel to the road and be in a straight line, that one steel lattice tower will be located on the property, that the route for the line does not cross a stream or other water on the property, that no transmission lines, pipelines, gas or oil wells or pivot irrigation are on the property, that the land is rangeland with clumps of mesquite and live oaks in the path of the line but not heavily wooded, and that the land is relatively flat.

Response No. 4-14:

- The prediction of a schedule of activities on any localized scenario, whether simple or complex, is not practical with any level of certainty.

  Following the Commission's approval of a route, LCRA TSC will begin detailed design activities including site surveys detailed design surveys, a Natural Resource Assessment (NRA), a Cultural Resource Assessment (CRA), boundary surveys, and soils testing. LCRA TSC will develop and implement a Stormwater Pollution Prevention Plan

(SWPPP) to prevent silting and other effects on water resources. LCRA TSC will construct, operate, and maintain the transmission line in accordance with the SWPPP and the design.

Preliminary Design Activities -
LCRA TSC will establish a preliminary design alignment in compliance with the Final Order issued by the PUC. This preliminary design alignment will be the basis for design surveys including aerial surveying as well as ground surveying and field observations when needed. This preliminary alignment will also be used as the basis for the NRA and the CRA. Some portions of the design surveys, NRA, and CRA will require LCRA TSC or its sub-contractors to be on the landowner's property. During this preliminary design phase LCRA TSC will contact landowners to gain access to the transmission line alignment on their property, and will be receptive to input from landowners and suggestions from landowners that may result in minor route adjustments and/or detailed design adjustments to address design constraints not known during the establishment of the preliminary alignment.

Detail Design Activities -
LCRA TSC will make design decisions and adjustments to the preliminary alignment based on the detailed design surveys, NRA, CRA, and other information obtained during the preliminary design activities. This will result in the final alignment and determination of right-of-way (ROW) and easement requirements.

Detail design will then continue, based on the ROW being acquired, including but not limited to the following activities along the alignment to determine the design needs. Any of these design activities may require multiple, intermittent, site visits to the project site by LCRA TSC representatives or sub-contractors prior to actual construction activities.

Construction Activities -
LCRA TSC will complete the detailed design, establish construction resources, and schedule construction activities, including but not limited to the following activities;

- preliminary structure staking, if needed
- ROW construction and clearing staking (final alignment, gates, clearing, etc.)
- final soil borings, if needed
- ROW construction (gates, stabilized construction entrances, stream crossings, etc)
- ROW clearing and debris disposal, if required
- foundation excavation and installation
- structure installation
- conductor and shield wire installation
- ROW restoration
- ROW re-vegetation
- SWPPP controls and re-vegetation monitoring until re-vegetation is at 70% of background vegetation
- Removal of erosion and sediment controls after site is re-vegetated

As one can easily observe, due to the number of design and construction activities there will be multiple, intermittent, site visits to the project site on any individual landowner's property, lasting over a period of months. Further, activity on any individual landowner or location is dependent on activities on the overall project, since many activities are sequential in nature.

While the overall duration of construction is measured in months, each phased construction activity would take only hours or days at any particular site before moving to another site. Of course, LCRA TSC would return to the sites for next activity, and so on.

Thus, the prediction of a schedule of activities on any localized scenario, whether simple or complex, is not practical with any level of certainty.

Preparer: Curtis Symank Title: Engineering Supervisor, LCRA
Sponsor: Curtis Symank Title: Engineering Supervisor, LCRA

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LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-14 (2nd Question):

Please describe in general terms how your response to Request No. 4-14 would be different if (1) the route for the line on the landowner's property included a steep, rocky slope and (2) the steel lattice tower's placement had to be on that slope rather than on the relatively flat portion of the land at the top of the slope.

Response No. 4-14:

This question and the previous question were both labeled Question 4-14. Please see the response to the previous Question 4-14.

The specific impact of terrain such as that described in this question only impacts construction duration if a structure is required on a slope. In such cases, during the detailed design the first effort is to design the line so that a structure location is not in a difficult location on a steep slope. Beyond that initial effort, consideration would be given to using the most appropriate structure type, such as possibly using a monopole instead of a lattice structure. Also, on lattice towers, foundations can be installed using varying heights on a slope, resulting in level foundation tops. The structure site can also sometimes be flattened or "uneven" adaptations can be used for lattice towers.

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LCRA TRANSMISSION SERVICES CORPORATION'S RESPONSE TO CLEAR VIEW ALLIANCE'S FOURTH REQUEST FOR INFORMATION

Question No. 4-15:

Do any of LCRA TSC's existing transmission lines parallel an interstate highway? If so, please identify each such highway and state the length (in miles or feet) that an LCRA TSC existing transmission line parallels that highway.

Response No. 4-15:

Yes. LCRA TSC has constructed, operates, and maintains numerous transmission lines that partially parallel, and in some cases overlap interstate highways, U.S. highways, and other highways. LCRA TSC does not maintain the specific information requested in the normal course of business.

Some recent examples of projects where LCRA TSC parallels existing interstate and other highway rights-of-way include:

- The Clear Springs to Hutto 345 kV transmission line, where the Commission selected a route that parallels State Highway 130 for approximately 21 miles.
- The Medina Lake to CPS Tie 138 kV transmission line, where the Commission selected a route that parallels FM 1283 for approximately 8 miles. The Medina Lake to CPS Tie includes overlapping TxDOT right-of-way for approximately one mile to avoid conflicts with habitable structures and other obstacles in an urbanized area.

- The Friendship to Manchaca 138-kV transmission line parallels FM 1626 and FM 1826, shares TXDOT ROW on SH45, and overlaps ROW onto SH45 Toll (future).

Please refer to pages 25 through 28 of the Direct Testimony of Mr. Curtis Symank for a discussion of paralleling, abutting, and overlapping highway rights-of-way.

Co-Preparer: Jessica Melendez	Title: Engineer, LCRA
Co-Preparer: Nathan Laughlin	Title: Engineer, LCRA
Co-Preparer: Curtis Symank	Title: Engineering Supervisor, LCRA
Sponsor: Curtis Symank	Title: Engineering Supervisor, LCRA