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APPLICATION OF BRAZOS ELECTRIC POWER COOPERATIVE, INC. FOR AMENDMENT TO ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR A 138-KV TRANSMISSION LINE IN COLLIN COUNTY

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2017 APR 28 PH 3: 05 **BEFORE THE STATE OFFICE** PUBLIC LETITITY COMMISSION FILING CLERK

ADMINISTRATIVE HEARINGS

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OF

DIRECT TESTIMONY OF **T. BRIAN ALMON ON BEHALF OF CITY OF ALLEN**

APRIL 28, 2017

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DIRECT TESTIMONY OF T. BRIAN ALMON

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BA-9	Cornelius-Pierce Policy 301 Study
BA-10	Docket 32476 Application

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I. STATEMENT OF QUALIFICATIONS

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

A. My name is T. Brian Almon. I am a consultant testifying on behalf of the City of
Allen in this case. My business address is 343 Bonnabel Blvd, Metairie, Louisiana,
70005.

6 Q. Please briefly outline your educational and professional background.

I have a Bachelor of Science degree in Mining Engineering and a Master of Business 7 A. Administration degree. My thirty-six years of professional experience include mine 8 9 operating, mine planning, coal marketing to the electric utility industry, and utility 10 I retired from the Public Utility Commission of Texas (PUCT) in regulation. 11 December, 2011 as the Director of Electric Transmission Analysis after 23 years of 12 employment. During sixteen years of my employment with the PUCT, I supervised a 13 staff whose primary duty was to review and file recommendations on applications for 14 amendments to certificate of convenience and necessity for transmission lines. A more detailed resume is provided in Exhibit BA-1. Each year I personally reviewed 15 16 from eight to fifteen transmission CCN applications as they were filed with the 17 PUCT. I also personally filed testimony on eleven transmission line cases:

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Q. Are you a registered professional engineer?

A. Yes. My registration number in the State of Texas is 39335. At this time, I am on
inactive status.

21 Q. Have you previously testified as an expert before the Commission?

22 A. Yes. A list of the dockets in which I have testified is provided in Exhibit BA-2.

1 II. <u>PURPOSE OF TESTIMONY</u>

2 **Q**. What is the purpose of your testimony in this proceeding? 3 A. My testimony addresses the failure of Brazos Electric Power Cooperative, Inc. 4 (Brazos) to adequately shown need for the transmission line project. My testimony 5 also evaluates Brazos' proposed routing of the proposed transmission line project 6 described as the Kittyhawk Transmission Line and Substation Project (Project) in 7 Collin County. . 8 Q. What law, regulations and Commission orders have you referred to in making 9 your evaluation and arriving at your conclusions and recommendations? 10 A. For my evaluation, I have referred to PURA § 37.056, P.U.C. SUBST. R. 25.101(b)(3) 11 and the Order of Referral and Preliminary Order in this proceeding. My testimony is 12 also based on my knowledge of commission precedent regarding transmission line CCNs. 13 14 0. How is your testimony organized? 15 A. My testimony begins in Section I with a statement of my qualifications. In Section II, 16 I discuss the purpose of my testimony. Section III presents a summary of my 17 conclusions and recommendations for this proceeding. In Section IV, I describe the transmission project submitted by Brazos. In Section V, I discuss whether Brazos has 18 19 shown need for the transmission project. In Section VI, I describe the process used 20 by Brazos and Cox McLain to select Route 11. In Section VII, I a discuss alternatives 21. to Route 11. I describe certain substation sites in Section VIII. In Section IX, I 22 discuss various changes from the routing study, And finally in Section X I conclude 23 my testimony recommendations to the Commission.

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1 Q. Have you prepared any exhibits related to your testimony?

- 2 A. Yes. They are attached to my testimony.
- 3 Q. Were these exhibits prepared by you or under your supervision?
- 4 A. Yes.
- 5 Q. What did you rely upon to reach your conclusions?
- A. I have relied upon the Application, Testimony and Responses to Request for
 Information (RFI) filed by Brazos and intervenors. Included in the Application are
 Attachment No. 1 Purpose and Need Study Kittyhawk Transmission Line and
 Substation which was prepared by C. H. Guernsey & Company (Guernsey) and
 Attachment No. 2 Route Study (RS) and Environmental Report (ER) which was
 prepared by Cox|McLain Environmental Consulting (Cox|McLain). I also referred to
 information previously presented by Brazos in other transmission line CCN cases.

13 Q. Did you visit the location of the proposed Kittyhawk transmission line?

14 A. Along with the attorney for the City of Allen, I visited the site on April 21, 2017.

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III. <u>SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS</u>

Q. Please summarize the conclusions that you have reached as a result of your
 analysis.

- 18 A. I conclude the following:
- Brazos has not sufficiently demonstrated the need for the Project within its
 selected routing study area.
- a. Brazos's 2025 load projections are overstated.
- b. Even if Brazos's 2025 load projections are accepted as accurate,
 Brazos will have more than enough capacity to meet this demand it if Almon-Direct

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1			fully develops the existing Craig Ranch, Lebanon, and Custer
2	•		Substations.
3			c. Brazos improperly rejected the distribution solution.
4		2.	If a route must be selected despite the lack of adequately shown need, Route
5			17 best addresses the requirements of PURA and the PUCT Substantive
6			Rules.
7		3.	Brazos considered the routing criteria as defined by PURA and the PUCT
8			Substantive Rules in its route assessment, in which it selected Route 11, and
9			determined that Routes 7, 8, 12, 17, and 25 were very similar to Route 11.
10		4.	Route 17 addresses the requirements of PURA and the PUCT Substantive
11			Rules better than Route 11, Brazos's selected route.
12			a. Route 17 has less distance affecting the frontage road of Highway 121
13			than Route 11.
14			b. Route 17 is more favorable than Route 11 because Route 17 does not
15			cross Highway 121.
16			c. For Route 17, the average distance of habitable structures is further
17			away from the transmission line than is the average distance for
18			Route 11.
19	•	5.	Additionally, Route 17 better addresses the requirements of PURA and the
20			PUCT Substantive Rules that the other four routes (7, 8, 12, 25) that Brazos
21			determined to be similar to Route 11.
22	Q.	What	is your recommendation?
23	A.	I recor	mmend that the Administrative Law Judge (Judge) and the Commission:
24		1.	Reject this Project because Brazos has shown no need for the Project.

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- 12.If a route must be selected, select Route 17 with possible modifications as I2suggest as the route for the Project.
- 3 3. If another route must be selected, direct Brazos to evaluate the use of
 4 Highway 121 public right-of-way.
- 5

IV. PROJECT DESCRIPTION

6 Q. What is your understanding of the project in the Brazos application?

7 A. Brazos proposes to construct a new transmission line located in Collin County, Texas. 8 The proposed transmission line will be approximately 2.04 to 4.96 miles of 138 kV 9 double circuit transmission line with single-pole structures. Brazos proposes that a 10 new approximately five-acre substation be sited along or near State Highway 121 11 (Sam Rayburn Tollway) (also referred to as the "121 Tollway") in the vicinity of 12 Alma Drive or Exchange Parkway in western Collin County. The transmission line 13 would connect the substation to an interconnection point located along an existing transmission line depending on the route selected. The transmission line right-of-way 14 15 would be approximately 70 to 100 feet wide.¹

16 Q. How did Cox|McLain support the Brazos application?

A. Brazos hired Cox|McLain to develop the routing study and environmental report
("RSER") in order to support the CCN Application process, as well as the federal
RUS review process. From the information in the RSER, Brazos selected twenty-five
route alternatives, between 2.04 and 4.96 miles in length, consisting of thirty-one

¹ Application, at 7.

route segments, four possible interconnect locations, and six possible substation
 locations.²

3 Q. What role did Guernsey perform with respect to the Brazos application?

- 4 A. Guernsey developed a study that is designed to support need for the proposed project,
 5 including load projections for the study area.³ The study evaluated alternative
 6 solutions to serve the forecasted load growth in the study area.
- 7 Q. Has the proposed project been reviewed by ERCOT?
- 8 A. No, the project is not required to be reviewed by ERCOT due to the size of the
 9 project.

10 V. <u>NEED ASSESSMENT</u>

11 Q. What does Brazos identify as the need justifying the proposed Project?

A. According to Brazos, the need for the proposed project is driven by rapid load growth and development in the study area and associated service reliability. Brazos asserts that load growth in the study area is occurring at a pace that will exceed CoServ's ability to reliably meet the need with existing distribution facilities.⁴ Brazos also points to load growth from areas outside of the study area entirely to the North and West to show need.⁵

² Application, Attachment No. 2, Bates 149.

³ Application, Bates 12-13.

⁴ Application, Bates 12.

⁵ Route Adequacy Test. Brian Almon, Ex. BA-3.

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1	Q:	How does Brazos propose to address this need?
2	A.	Brazos proposes to add a third substation in the study area adjacent to the 121
3		Tollway. Brazos proposes to locate that substation at one of 6 locations in the
4		vicinity of the cross-road of Alma Road or Exchange Parkway. Brazos's ultimate
5		plan for the proposed substation is to allow Brazos to shift circuits to meet demand
6		North and West of the 121 Tollway. In the Guernsey Need Study, Brazos states:
7 8 9 10 11 12		By 2025, two (2) of the existing four (4) circuits serving south of Highway 121 from Craig Ranch will be relocated to serve load north of Highway 121. [Additionally,] [t]hree (3) circuits from Lebanon will be relocated to serve north of Highway 121 and one (1) circuit will be relocated to serve the surrounding area. One (1) circuit from Custer Substation will be relocated to serve the surrounding area. ⁶
13	Q.	Did Brazos determine that there were reasonable alternatives to the Project as
14		defined by the application?
15	A.	No. The Guernsey Need Study stated that there are no practical or reasonable
16		alternatives to the proposed project. In particular, the Guernsey Need Study stated
17		that a distribution alternative was insufficient from a service, cost, and reliability
18		perspective. ⁷
1 9	Q.	What is Brazos's 2025 projected load?
20	A.	In the Guernsey Need Study, Brazos projects the 2025 load to be 335.8 MW
21		for the area (or 342.7 MVA assuming a 0.98 power factor). ⁸

⁶ Application. Attachment No. 1, Bates 104.

⁷ Application, Bates 13-14.

⁸ Application, Attachment No. 1, Bates 87-88.

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1	Q.	How did the Guernsey Need Study develop that load projection?		
2	A.	Table A-1 of the Need Study reflects the total load projections. In this Table,		
3		Guernsey provides the actual loading for Craig Ranch, Custer, and Lebanon		
4		substations for 2014 and projected loading for subsequent years.		
5	Q.	How do the projected and actual loads for the Craig Ranch Substation from		
6		2014 to 2016 compare?		
7	A.	In response to discovery, Brazos provided the actual peak loads for the substations		
8		serving the study area in 2015 and 2016. The projected loads in the Guernsey Need		
9		Study are higher than the actual peak loads for those substations. For the Craig		
10		Ranch substation here is a comparison of the projected loads to actual:		
11		Craig Ranch Substation Peak Loads		

Craig Ranch Substation Peak Loads

	2015	2016
Projected in Guernsey Need Study	71 MW	88 MW
Actual. ⁹	42 MW	39 MW
Percentage Peak Load Overstated	r 69%	125%

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Are there similar differences for the Lebanon substations? 13 Q.

14 Α. The projections for the Lebanon substation are much closer to actual, but they are still

15 overstated.

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⁹ Response to City of Allen 3rd RFI, Qt. 10, Exhibit F.

Lebanon Substation Peak Loads

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Percentage Peak Load Overstated	8.5%	12.2%
Actual. ¹⁰	47 MW	49 MW
Projected in Guernsey Need Study	51 MW	55 MW
	2015	2016

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3 Q. How do the differences in 2015 and 2016 actual and projected load affect the
4 remainder of the Guernsey Need Study used to justify the Kittyhawk
5 Substation?

- A. When actual peak loads are used instead of the overstated projected loads, the entire
 basis for the projected system shortage is undermined. Each year of the projected
 load on which the Guernsey Need Study is based is developed as a percentage
 increase to these overstated load projections. The projected loads for 2025 appear to
 be significantly overstated.
- 11 Q. Have you made a graphic representation of the actual loads from 2008 to 2016
 12 for Craig Ranch, Custer and Lebanon?

13 A. Yes. Exhibit BA-6 shows that the total actual load has been fairly constant from 2013

14 , to 2016 which is contrary to the growth rates shown in Need Study Table A-1.

- Q. Has Brazos previously presented historic load projections for the study area to
 justify Craig Ranch substation?
- A. Yes. In 2006, Cornelius-Pierce Consulting Engineers, Inc. submitted to CoServ the
 Craig Ranch Substation Policy 301 Study. That study is included with this testimony

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¹⁰ Id

1		as Exhibit BA-9. In that study,	Cornelius-Pierce made	e load projections for the
2		proposed Craig Ranch substation a	nd the existing Lebanon	and Custer substations for
3		2012. These projections and the ac	tual loads for 2012 are s	hown below in MW.
4			Projected	Actual
5		Craig Ranch A (1)	45.9	28.7
6		Craig Ranch B (2)	45.0	15.9
7		Lebanon B (2)	48.3	45.8
8		Lebanon C (3)	47.2	16.9
9		Custer B (2)	48.4	14.6
10		Custer C	49.5	19.9
11		This information demonstrates that	t Brazos has previously	overestimated the load for
12		this same portion of the CoServ ser	vice areas.	
13	Q.	Have you reached any conclusio	n concerning the need	for the Project in
14 ·		relation to Brazos's load projecti	ons?	
15	A.	I conclude that Brazos has not suff	iciently demonstrated the	e need for the Project. The
16		feeder loads on the existing sub	ostations serving the st	udy area do not show a
17		consistent growth pattern to justify	y a new substation servi	ng the study area. Brazos
18		provided the load data used in the	Guernsey Need Study.11	¹ Brazos has not provided
19		[/] any information to verify or supp	ort its rapid projected g	rowth in the study area to
20		2025, which greatly departs from the	ne existing data.	

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¹¹ Response to City of Allen's 3rd RFI, Qt. 10.

1	Q.	What was Brazos's projected 2025 planning capacity of its existing substations
2		without the Kittyhawk substation?
3	A.	Brazos totals the projected 2025 capacity for its planned substations without
4		the Kittyhawk substation to be 248 MVA. 12 This is only 94.7 MVA less than
5		Brazos's projected 2025 peak load of 342.7 MVA (or 335.8 MW).
۰6	Q.	How did Brazos determine its projected 2025 planning capacity without the
7		Kittyhawk substation?
8	.A.	To obtain this total, Brazos included three transformers at the Craig Ranch
9		Substation, two out of three of the existing transformers at the Custer
10		Substation, and two out of three of the existing transformers at the Lebanon
11	•	Substation. ¹³ Below is a copy of Guernsey Need Study Table 1, which
12		summarizes Brazos's projection. ¹⁴

TABLE 1SUBSTATION TRANSFORMER BANK LOADING (STUDY AREA)WITHOUT NEW KITTYHAWK SUBSTATION

SUBSTATION	2014 MW DEMAND	2014 PLANNING CAPACITY (MVA)	2025 MW DEMAND	2025 PLANNING CAPACITY (MVA)
CRAIG RANCH 1	31.5	40.0	65.1	40.0
CRAIG RANCH 2	21.6	40.0	53.3	· 40.0
CRAIG RANCH 3	0.0	0.0	52.7	40.0
CUSTER 2 (Inside)	22.5	32.0	31.4	32.0
CUSTER 3 (Inside)	16.3	40.0	45.5	40.0
LEBANON 2 (Inside)	38.8	40.0	62.7	40.0
LEBANON 3 (Inside)	<u>10.8</u>	<u>16.0</u>	<u>25.1</u>	<u>16.0</u>
TOTAL	141.5	208.0	335.8	248.0

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¹² Attachment No. 1, Bates 87.

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13 *Id.*

14 Id.

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April 28, 2017

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1 **O**. How many transformers are currently housed at the Craig Ranch, Custer, and 2 **Lebanon Substations?** The Craig Ranch substation currently contains only two transformers. The Lebanon 3 A. 4 substation currently contains only three transformers. The Custer substation currently ຸ5 contains four transformers. Each of these substations can accommodate additional transformers to add capacity that is greater than reflected in the Guernsey Need 6 7 Study. Has Brazos previously asserted that it has the ability to add new transformers to 8 **Q**. 9 Craig Ranch, Custer, and Lebanon Substations? 10 Yes. Under Brazos standard construction, the existing Craig Ranch and Lebanon A. 11 substations can each house four 50 MVA transformers with a planning capacity of 40 MVA each. And Brazos has previously asserted that the Custer Substation can house 12 six 50 MVA transformers with a planning capacity of 40 MVA each. 13 14 When Brazos applied for the now-existing Craig Ranch Substation in PUC 15 Docket 34276, Brazos it represented to the Commission that its final design calls for construction of a total of *four transformers at the Craig Ranch Substation*.¹⁵ In that 16 17 same application, Brazos also evaluated an alternative that would involve expansion 18 of the then-existing Custer and Lebanon Substations.¹⁶ In the plan, Brazos details 19 construction of a *fourth transformer*, four accompanying feeder bays, and two accompanying new feeders at the Lebanon Substation. ¹⁷ Brazos also details 20 21 construction of a *fifth and sixth transformer*, eight accompanying feeder bays, and

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17 Id.

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¹⁵ PUC Docket 34276, Application of Brazos Electric Power Cooperative, Inc. to Amend a Certificate of Convenience and Necessity (CCN) for a 138-kV Double Circuit Transmission Line and Substation in Collin County, Texas, Application, Attachment No. 7 at 3 (May 5, 2007).

¹⁶ PUC Docket 34276, Application, Attachment No. 1 at 17.

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1		four accompanying new feeders at the Custer Substation. ¹⁸ A copy of the Brazos
2	•	Application from that case evaluating these alternative substation configurations is
3		included with my testimony as Exhibit BA-9 and Exhibit BA-10.
4	Q.	Does Brazos state that the Kittyhawk substation is needed because the existing
5		substations cannot be expanded with more transformers and that there is not
6		sufficient space for new feeders to exit the substations?
7	A.	Yes.
8	" Q.	What is your opinion of Brazos's recent assertion that it cannot add new
9	5 <u>7</u>	transformers to the existing Craig Ranch and Lebanon substations?
10	A.	Brazos's recent assertion that it cannot add new transformers and distribution feeders
11		to either of these existing substations is unpersuasive and unsupported. This assertion
12		contradicts the physical space available at these substations and Brazos's prior
13		representations to the Commission and standard substation construction policies.
14	Q.	If Brazos built the existing Lebanon, Craig Ranch, and Custer Substations out to
15	_	their planned capacities, how much additional demand would be met?
16	ŀA.	If Brazos added a fourth transformer to the Craig Ranch Substation, a fourth
17		transformer to the Lebanon Substation, and fifth and sixth transformer to the Custer
18	v	Substation, Brazos would have an additional 160 MVA of planning capacity to meet
19		future loads in the study area.
20	Q.	. Even ássuming Brazos's load projections are accurate, have you reached any
21		conclusion about the need for the Project?
· 22	A.	Even accepting Brazos's future 2025 load projections, I conclude that the
23		Project is not needed to serve the new projected load in the study area.

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1	Existing Brazos substations within the study area-Craig Ranch, Lebanon,
2	and Custer-have more than ample expansion capacity to serve Brazos's
3	projected 2025 load. If Brazos built out these existing substations in the study
4	area, it would add 160 MVA of capacity to its already projected 248 MVA of
5	capacity. This totals to 408 MV of capacity. This is the same total capacity
6	that Brazos seeks to add with the Kittyhawk Substation. This is also 65.3
7	MVA more than needed to meet to even Brazos's projected 2025 load of
8	342.7 MVA (or 335.8 MW). That amount of extra capacity is equivalent to
9	. more than an entire transformer.
10	Below is a table that shows that, when fully developed, the capacity of

these existing substations exceeds Brazos's 2025 projected demand.

	ORMER BANK LOAD		
WITHOUT NEW KITTYHAWK SUBSTATION AND INCLUDING FULL			
	2025 MVA		
SUBSTATION	DEMAND @ .98 PF	2025 PLANNING CAPACITY (MVA)	
CRAIG RANCH 1		40.0	
CRAIG RANCH 2		40.0	
CRAIG RANCH 3		40.0	
CRAIG RANCH 4		40.0	
CUSTER 2 (Inside)		32.0	
CUSTER 3 (Inside)		40.0	
CUSTER 5		40.0	
CUSTER 6		40.0	
LEBANON 2 (Inside)	`	40.0	
LEBANON 3 (Inside)	·	<u>16.0</u>	
LEBANON 4		40.0	
TOTAL	342.7	408.0	

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1	Q.	What is the cost recovery mechanism for distribution solution as compared to a
2		transmission solution?
3	A.	If. Brazos builds the Project as planned the estimated cost in the range of
4	٠	approximately \$ 25.5 to \$ 51. would be added to Brazos' transmission cost of service.
5		These costs would be recovered through charges spread through all end-use
6		customers in ERCOT. If a distribution solution is adopted, CoServ would be in the
7		position of needing to recover those costs directly from its members.
8	Q.	Brazos claims that the proposed transmission line and substation will increase
9		the transmission reliability for the study area. Do you agree?
10	A.	No. In the Application, Brazos states that the proposed line will increase reliability
11		by adding another transmission source to the study area served by the existing
12		substations. However based on the configuration proposed by Brazos, the proposed
13		transmission addition is a radial line that is connected to the radial line connecting the
14		Craig Ranch substation to Oncor's existing 345 kV line. This configuration does not
15		add a new transmission source from the perspective of reliability. If the transmission
16		line connecting the Craig Ranch substation to the Oncor line were to have an outage
17		in an N-1 contingency, the new proposed transmission line and substation would also
18		experience simultaneous outage. From a transmission perspective, the proposed
19		project does not increase reliability.
20	Q.	Is it reasonable to conclude that the proposed Kittyhawk transmission line and
21		substation should be constructed?
22	A.	No. The Guernsey Need Study significantly overstates the load projections for the
23		study area. Further, the Guernsey Need Study significantly understates the available
24		planning capacity for the existing substation sites. Given that Brazos could meet even
	Almon-	Direct April 28, 2017

1	its own 2025 projected demand by building out its existing substations in the study
2	area, I conclude that it is not reasonable to construct the proposed transmission line
3	and Kittyhawk substation.

4 VI. <u>BRAZOS'S ROUTE DEVELOPMENT AND ANALYSIS</u>

5 Q. Please describe the study area and how Brazos approached the evaluation of the 6 area.

7 A. The study area encompasses portions of the Cities of Allen, Frisco, McKinney, and 8 Plano (collectively, the "Four Corners Community"). Residential land use within the 9 study area consists of dense residential subdivisions as well as large-lot residential 10 subdivisions, scattered single-family residences, duplexes, and apartment buildings. Commercial land use within the study area includes but is not limited to gas stations, 11 12 medical and dental facilities, retail, restaurants, movie theaters, business parks, and storage facilities. The study area also contains undeveloped land, places of worship, 13 schools, parkland, sports facilities, and public/municipal/utility facilities. Brazos 14 15 stated that it intends to avoid direct impacts to habitable structures, including residences, businesses, places of worship, schools, hospitals, nursing homes, or other 16 structures occupied by humans on a regular basis. As such, Brazos predicts that no 17 18 relocations or displacements would occur as a result of any of the alternatives proposed for the project. Brazos also intends to minimize the number of habitable 19 20 structures within 300 feet of the transmission line centerline to the extent reasonable 21 and feasible. Utility relocations are not anticipated by Brazos for the project.

22 Q. What factors did Brazos consider in selecting alternative routes for the Project?

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1	A.	The factors that Brazos states it considered in selecting routes for the Project were as
2		outlined in PURA §37.056 and PUC Substantive Rule §25.101, as well as Brazos
3		Electric's standard routing factors, as follows: 19
4		<u>Rule §25.101(b)(3)(B)(i)-(iv) Factors</u> :
5		1. Routes utilizing existing, compatible rights-of-way, including the use of vacant
6		positions on existing multiple-circuit transmission lines;
7		2. Routes parallel to existing compatible rights-of-way;
8		3. Routes parallel to property lines or other natural or cultural features; and
9		4. Routes conforming with the policy of prudent avoidance.
10 .		Brazos Electric's Routing Factors:
11		1. Minimum adverse environmental impacts;
12		2. Minimum adverse impact on potential growth areas;
13		3. Maximum utilization of property lines, roadways, and fence lines;
14		4. Maximum utilization of existing ROWs;
15		5. Minimum adverse impacts to rangeland and farmland;
16		6. Minimum adverse impacts to existing residences;
17		7. Acceptance of routing by federal and state agencies; and
18	١	8. Public meeting and landowner input;
19		Additional factors considered by Cox McLain Environmental Consulting, Inc.:
20		• Minimization of route segment lengths;
21		• Minimization of angles;
22		• Minimizing visual contrast with the natural landscape;

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 $^{, ~~^{19}}$ Application, Bates 15-16; Attachment No. 2, Bates 132-33.

1		• Minimizing conflict with current and planned land uses, airports/landing strips,
2		parks and recreation areas, radio/TV towers, and surface irrigation;
3		• Minimizing impacts to natural resources (such as wetlands, woodlands, and
4		wildlife) and human resources (such as residences and cultural resources);
5		• Minimizing the number of habitable structures within 300 feet of the
6		transmission line centerline.
7		• Avoidance of densely populated residential areas and maintaining as much
8		distance as practicable from individual homes and public facilities (such as
9		churches, schools, etc.); and
10		• Avoidance of major road crossings in the vicinity of interchanges and
11		intersections.
12	L	Using these factors, Cox McLain initially identified thirty-two proposed route segments
13		to be further evaluated. ²⁰ Ultimately, several route segments were eliminated and
14		Brazos's final application contained twenty-five route alternatives that all parallel the 121
15		Tollway Corridor. ²¹
16	Q.	Which of the routes did Brazos select as the route that it thinks best addresses
17		the requirements of PURA and the PUCT Substantive Rules?
18	· A .	Brazos Route 11 (INT 2 - 3 - 7 - 9 - 11 - 27 - Substation 3). ²²
19	Q. .	Which criteria used in Brazos's routing evaluation did Brazos cite to justify its
20		selection of Route 11?
2 ¹	. A.	Brazos cited the following criteria to justify its selection of Route 11 ²³ :

²⁰ Application, Attachment No. 2, Bates 134-50.

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²¹ Id

²² Application, Bates 16-17; Attachment No. 2, Bates 150.

²³ Application, Bates 17; Attachment No. 2, Bates 150.

Page 21 1 the shortest route; 2 impacts as few habitable structures (two) as any other option; 3 within 1,000 feet of fewer cemeteries than other options; 4 crosses fewer streams, open water, wetlands, pasturelands, and woodlands 5 than many other options; less feet of visual foreground for parks and highways than many other route 6 7 options; 8 least expensive route option. 9 Have you included in your testimony Route 11's values for Brazos's twenty-five Q: 10 routing criteria? 11 A. Yes. See Exhibit BA-3 for the values of the twenty-five criteria for Route 11. 12 VII. **SIMILAR ALTERNATIVES TO ROUTE 11** 13 Q. Does Brazos highlight five alternatives that are very similar to Route 11? 14 A. Yes. Brazos highlights five alternative routes (7, 8, 12, 17, and 25) that are very 15 similar to Route 11.24 16 Q. How do these five alternative routes compare? 17 A. Exhibit BA-4 provides a comparison of the criteria for the five routes (7, 8, 12, 17, 18 and 25). For ease of comparison, I eliminated the routing criteria from the exhibit 19 that have no value for any of the twenty-five alternative routes. 20 Q. What have you concluded from this comparison?

²⁴ Application, Bates 17.

Almon-Direct

Page	22

		1 450 22
1	A.	When compared to the other three routes that are similar to Route 11, Route 17 and
2		25 better address the criteria than Routes 7, 8, and 12 for these criteria:
3.		• Total length
4		• Length of Parks Visual Foreground
5		• NHD Open Water (linear feet) (Routes 7 and 8)
6		• Woodland impacts, linear feet (Routes 7 and 8)
7		Length across pastureland
8		• Crossing state highway (Routes 7 and 8)
9	x	Length across Highway Visual Foreground
10	Q.	Would you agree that Routes 7, 8, and 11 are more favorable than Route 17
11		when considering the number of habitable structures, paralleling roadways and
12		utility lines because the routes parallel the 121 Tollway along undeveloped land?
13	A.	That conclusion can only be reached if these criteria are incorrectly considered in
14		isolation from the overarching community values routing requirements contained in
15		PURA § 37.056(c) and PUC Substantive Rule § 25.101(b)(3)(B). PURA § 37.056(c)
16	,	requires to the Commission to consider "community values" as a factor in its decision
17		to grant or deny a certificate of convenience and necessity. And PUC Substantive
18	、	Rule § 25.101(b)(3)(B) requires that a transmission line "shall be routed to the extent
19		reasonable to moderate the impact on the affected community." ²⁵
20		Here, the undeveloped land within the study area that between the 121
21		Tollway and Ridgeview Drive-known as the City of Allen's "Commercial Corridor"
22		lies at Allen's northern gateway. The City of Allen has taken continuous and

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²⁵ Tex. Util. Code § 37.056(c); 16 Tex. Admin. Code § 25.101(b)(3)(B).

1 coherent actions to design the Commercial Corridor for unique, high-quality 2 commercial development and professional employment centers, as well as for protection of existing greenbelts. As the City of Allen witness in this proceeding 3 testifies, Allen's decades-long planning goals for the Corridor are now just coming to 4 fruition and would greatly benefit the entire Collin County Four Corners community. 5 6 Even Brazos understands and has acknowledged the importance of this unique 7 Corridor to the Four Corners community, describing the land that fronts the 121 8 Tollway as a "lucrative commercial corridor" that is "subject to extremely competitive inquiry" and is an area of "increasingly high demand for commercial 9 developers."26 10

I conclude that the efforts of the City of Allen to preserve this Corridor for these land uses that encompass community values, as wells as the negative impacts of routes through this Corridor, must be considered and included in any evaluation of the proposed routes.²⁷ I further conclude that, in light of the great significance of the Commercial Corridor to the Collin County Four Corners community, the differences in the other factors do not make Routes 7, 8, and 11 more favorable than Routes 17 and 25.

18 Q. What have you concluded about the comparison of the five proposed routes?

A. I conclude that Route 17 better addresses the requirements of PURA and the PUCT
Substantive Rules than the other four proposed routes (7, 8, 12, and 25). Route 17
will parallel less of Highway 121 by 1,505 feet than Route 25 and will have less
impact on Valliance Bank at Highway 121 and Lake Forest Drive.

²⁶ PUC Docket 34276, Application at 13.

²⁷ See Tex. Util. Code § 37.056(c); 16 Tex. Admin. Code § 25.101(b)(3)(B).

Almon-Direct

1	Q.	Does Route 17 address the requirements of	PURA and the	PUCT Substant	tive
2		Rules as well as Route 11?			
3	A.	Yes. I conclude that Route 17 addresses the re-	equirements of PU	JRA and the PU	CT
4		Substantive Rules as well as Route 11.			
5	Q.	How do the criteria used by Brazos to justify	Route 11 compar	e with Route 17	· ?
6	A.	Brazos used 11 criteria to justify its selection for	Route 11. The co	omparison of the	:11
7		criteria for both Route 11 and Route 17 is: ²⁸			
8		Criteria	<u>Route 11</u>	<u>Route 17</u>	
9		Length in miles	2.04	2.25	
10		No. of habitable structures with 300 ft.	2	14	
11		No. of cemeteries within 1,000 ft.	0	0	
12		No. of stream crossings	2	2	
13		NHD open water in feet	47	0	
14		No. of wetland polygons crossed	1	0	
15		Length across pastureland	4,976	5,864	
[~] 16.		Length across woodland	678	311	
17		Length of parks visual foreground	10,745	11,896	
18		Length across highway visual foreground	10,745	11,896	
19		Cost (\$000)	25,487	28,301	
20	Q.	Do you consider the differences between crite	ria for Route 11	and Route 17 ci	ited
21		by Brazos to be significant?			
22	A.	No, I do not.			
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23 Q. Why do you conclude that the differences in criteria are not significant?

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²⁸ Application, Attachment No. 2, Table B.

1	A.	Considering the 11 criteria, Route 11 is slightly more favorable than Route 17 in only
2		six criteria. Route 17 is more favorable for three criteria. Two criteria are the same.
3	Q.	What are your observations regarding the cost differences between Route 11 and
4		Route 17?
5	А.	First, I do not view the cost differences as determinative in this case. The majority of
6		the cost difference derive from right-of-way cost estimate differences. In my
7		experience this factor changes the most from the estimate to actual cost of the line.
8		Further, the right of way cost estimates in this case are based on length of line which
9		is not the only factor that would create a difference in the right-of-way cost. Given
10		the wide variance in right-of-way costs expected in this instance, the cost difference
11	ſ'	between Route 17 and Route 11 are not material to route selection.
12	Q.	Does Brazos agree that Route 17 compares relatively closely to Route 11?
13	A.	Yes. Brazos stated that Route 17 and Route 11 are relatively close in total length and
14		estimated cost. ²⁹
15	Q.	Are there major differences between Route 11 and Route 17 that should be
16		considered by the Administrative Law Judge and the Commission?
17	A.	Yes. Route 11 will cross the 121 Tollway twice (Segment 3 and 27) with structures
18		greater than 150 feet tall compared to 120 feet for the average height of a structure. ³⁰
19		These highway spans will be very visible to the traffic on the highway and have a
20		major impact on the aesthetics of the project. In addition, the structure will cost
21		\$300,000 and have a foundation 15 feet in diameter.

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³⁰ Response to City of Allen 3rd RFI, Question 14. Almon-Direct

²⁹ Application, Bates 17.

1		Also, even though Route 17 has more habitable structures within 300 feet (14)
2		than Route 11 (2), the average distance of the habitable structures from the centerline
3		is closer for Route 11 (176 feet) than for Route 17 (194 feet). ³¹
4		The consideration of community values also supports selection of Route 17.
5		City of Allen witness Bass discusses the community values reflected in the City of
6		Allen Comprehensive Plan and how Route 11 would be contrary to those community
7		values. Route 11 would be located within the City of Allen's Commercial Corridor,
8		which the City has-for decades-preserved for unique land uses (high-end
9		professional employment centers and commercial developments) that would
10		significantly promote community values. Route 17, unlike Route 11, is not located
11		in the Commercial Corridor and thus better moderates the impact on the affected
12		community and maintains community values as required by PURA § 37.056(c) and
13		PUC Substantive Rule § 25.101(b)(3)(B).
14		In addition, treatment of the 121 Tollway Corridor in a manner consistent with
15		the Comprehensive Plan is also consistent with selection of Route 17 because Route
16		17 minimizes the distance of transmission line across the front entrance of properties
17	, 4	along the frontage road of the 121 Tollway.
18	Q.	What other statutory criteria are implicated by Route 11 more than Route 17?
19	A.	There are several greenbelt areas that fall under the authority of the City of Allen
20		Parks and Recreation Department that would be negatively impacted by Route 11 as
21		discussed the testimony of City of Allen witness Bass. This factor is in favor of
22		selection of Route 17.
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³¹ Application, Bates 49, 72.

Almon-Direct

1	Q.	If Brazos has shown any need for the Project, where have you concluded that
2		need is generally located?
3	A.	Brazos's need study only identifies significant new load in the area North and West of
4		the 121 Tollway. Of the total projected new load from new subdivisions constructed
5	۴. پ	between 2014-2016 that Brazos cites as supporting its need assessment, nearly 80%
6		stems from subdivisions that are north of the 121 Tollway. And nearly 30% of the
[*] 7		total projected new load stems from subdivisions that would be constructed outside to
8	1. 1.	the North and West of the study area entirely. Furthermore, the majority of the area
9		north of the 121 Tollway within the study area is served solely by CoServ.
10	Q.	Is it reasonable to conclude that the proposed Kittyhawk substation should be
11		located north of the 121 Tollway?
12	A.	Yes. With most of the load growth north of the 121 Tollway, I conclude that it is
13°		reasonable to locate the Kittyhawk substation in the area north of the highway.
14	Q.	Would it be reasonable to locate the proposed Kittyhawk substation south of the
15		121 Tollway?
• 16	A.	No. With most of the load growth north of the 121 Tollway, I conclude that it would
17		be unreasonable to locate the Kittyhawk substation in the area south of the highway in
18		the City of Allen.
19	Q.	Does Route 17 comply with statements made by Texas Parks and Wildlife
20		Department (TPWD) about the Project?
21	A.	Yes. TPWD typically recommends that transmission line routes be located adjacent
22		to previously disturbed areas such as existing transportation right-of-way. ³² Route 17
23		parallels roads and highways for 76 percent of its route (Highway 121, Lake Forest

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³² TPWD letter, page 3.

1 Drive, Stacy Road, and Henneman Way).³³ Route 11 parallels more existing 2 transportation right-of-way at 90 percent, but all of this distance parallels Highway 3 121.

- 4 VIII. SUBSTATION SITES
- 5 Q. Brazos has identified Substation site 3 as the most desirable substation site, do 6 you agree?

7 A. <u>Yes.</u>

8 Q. Which of Brazos's proposed substations are within the Commercial Corridor?

9 A. Substations 1, 2, 5, and 6 are all located with the City of Allen's
10 Commercial Corridor.

- 11 Q. Are the owners of any of these four properties willing sellers?
- 12 A. No.

Q. Does the City of Allen believe that there are willing sellers of potential substation
sites in the City of McKinney?

A. Yes. There appear to be willing sellers for the properties for Substations 3 and 4. I
have observed a "For Sale" sign advertising property in the vicinity of Substation Site
4. There also may be a willing seller for the property currently known as the Craig
Ranch Ballfields, which is just north of the Substation 3 site. Although Brazos did
not include the Craig Ranch Ballfields in its application, Brazos advised the property
owner to proffer the site in settlement discussions.³⁴ Concerning the Craig Ranch
Ballfields, the property owner, David Craig, contacted Brazos and proffered the site

³³ Application, Attachment 2, Bates 207, 208, 213.

³⁴ Attachment No. 10, Bates 1028; see also Route Adequacy Testimony of Brian Almon, Ex. BA-6.

for a substation.³⁵ Brazos recounts David Craig as stating that he "had determined the
 highest and best use for the land was no longer ball fields" and was "offering up the
 land" to Brazos for a substation site.³⁶

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Q. Are there any of the other 19 alternative routes that are superior to Route 25?

It does not appear so at this time. Several of the other routes, like Route 11 cross the 6 A. 7 Sam Rayburn Tollway once or twice. As indicated in my testimony, this crossing is 8 unnecessary, raises costs, is contrary to community values, and has unnecessary 9 aesthetic impacts to the Sam Rayburn Tollway that serves as a gateway entrance to people coming to this area from the DFW airport. Further, other routes impact 10 community greenbelts and parks as addressed in the testimony of Mr. Bass in a 11 12 manner that can be avoided. The routes using segments along Ridgeview Drive have negative impacts described in the testimony of Mr. Bass, including a much greater 13 number of residential habitable structures affected in a manner that is unnecessary 14 15 and contrary to the community values of that residential community.

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IX. <u>CHANGES FROM ROUTING STUDY</u>

17 Q. Have you identified any discrepancies in the Routing Study?

A. Yes. During the tour of the Project I noticed habitable structures along Segment 6 to
be very close to the transmission line ROW. In fact it appeared to me that the
structures may be in the ROW. It appears that an additional structure may have been
built since the time that the habitable structures were identified on the map.

³⁵ Attachment No. 10, Bates 1028; see also Route Adequacy Testimony of Brian Almon, Ex. BA-6.

³⁶ Attachment No. 10, Bates 1028; *see also* Route Adequacy Testimony of Brian Almon, Ex. BA-6. Almon-Direct

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1		Also, I noticed areas where the 1211 Tollway ROW could be used to improve
2		routing and avoid crossing entrances to properties that are on the 121 Tollway
3		frontage. Brazos did not propose any routes using the 121 Tollway ROW. As an
4		example, Brazos did not consider the ROW of the 121 Tollway when routing around
5		Valliance Bank with Segment 8.37
6	Q.	What public agency operates Sam Rayburn Tollway (State Highway 121)?
7	A.	The North Texas Tollway Authority (NTTA) operates the highway.
8	Q.	Does NTTA have a stated policy for evaluating the use of its ROW?
9	A.	Yes. I have attached as Exhibit BA-5 the policy obtained from its website. It does
10		not appear to prohibit the use of the tollway ROW, but approval is necessary from the
11		NTTA Board of Directors.
12	Q.	Did NTTA indicate that a future expansion of the 121 Tollway would use the
13		median?
14	A.	Yes. NTTA told Brazos that a future expansion would use the median but NTTA did
15		not exclude the use of other ROW of the 121 Tollway.
16	Q.	Does the Texas Department of Transportation (TxDOT) still have some control
17		over the 121 Tollway?
18	A.	Since the 121 Tollway was originally designated a state highway, TxDOT has some
19		control over the 121 Tollway.

Almon-Direct

April 28, 2017

³⁷ Response to TMF 1st RFI, Qt. 16.

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1	Q.	If that is the case, do you understand that TxDOT has cooperated with
2		transmission companies about the use of its ROW for transmission facilities?
3	A.	Yes. In Docket No. 38354, Lower Colorado River Authority and TxDOT cooperated
4		to allow for the construction of some transmission facilities in the TxDOT ROW. See
5		Exhibit BA-8 for details of the arrangement.
6	X.	RECOMMENDATIONS
7	Q.	In summary, what recommendations do you make to the Commission?
8	A.	I recommend that the Commission reject this Project because Brazos has failed to
9		show that a new substation is needed to meet even its 2025 projected load. Brazos
10		could easily meet its projected future load by fully developing its existing substations
11		in the study area. If, despite this strong evidence of lack of need, a route still must be
12		selected, I recommend that the Commission select Route 25.
13	Q.	Does this conclude your testimony?
14	A.	Yes.

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EXHIBIT BA-1

Qualifications of T. Brian Almon

EXHIBIT BA-1

QUALIFICATIONS

OF

T. BRIAN ALMON

I received a Bachelor of Science in Mining Engineering from the University of Arizona in 1967 and a Master of Business Administration degree from the same university in 1973. I also attended Virginia Polytechnic Institute and State University for postgraduate studies in mining engineering during 1968 and 1969. I have attended seminars on coal supply agreements, economic evaluation of mining projects, and regulation of electric utilities.

After receiving my BS degree, I was employed with New Jersey Zinc Company as a Mine Engineer (Austinville, Virginia). In 1970, I joined the Anaconda Company as an Assistant Shift Foreman at the Twin Buttes copper mine (Sahuarita, Arizona). After completion of my MBA degree, I was employed by El Paso Coal Company (El Paso, Texas), a subsidiary of El Paso Natural Gas Company, in several positions: Development Engineer, Senior Development Engineer, Administrator of Technical Staff & Coal Marketing, and Manager of Coal Marketing and Technical Services.

As an engineer, my responsibilities included planning and cost estimating for surface coal mines. As administrator and manager, I was responsible for economic evaluation of coal projects, coal analyses, computer program development, forecasting the fuel needs of electric utilities, and marketing El Paso Coal Company's coal properties located in four western states.

In 1980 I joined Tenneco Coal Company (Houston, Texas) as Manager of Coal Marketing with responsibility for marketing Texas and Mississippi lignite to electric utilities. My duties included the determination of future fuel needs for the electric utilities in Texas. I followed very closely the activities of utilities and competing coal companies. I also tracked prices of competing fuels and coal transportation.

In May 1988, I began my employment with the Commission as a Fuel Engineer. My duties included evaluating utility fuel procurement management practices, forecasting short and long-term fuel prices, recommending depreciation rates and fuel inventory levels, and supporting Commission projects in the fuel area. In December 1993, I became Manager of Engineering with responsibility over fuel, power plant engineering, and transmission line siting. On October 1, 1995, as part of an agency-wide reorganization, I assumed the responsibility for fuel as Assistant Director of Fuel Analysis. On January 9, 1998, I assumed the responsibility for fuel and engineering as an Assistant Director in the Electric Industry Analysis Division. When I retired from the PUCT in December, 2011, my title was Director of the Electric Transmission Analysis Section in the Infrastructure and Reliability Division with essentially the same duties.

I am an inactive registered Professional Engineer in the State of Texas (Serial Number 39335).

PUC Docket No. 46429 SOAH Docket No. 473-17-1552

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EXHIBIT BA-2

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List of Dockets Containing Testimony of T. Brian Almon

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EXHIBIT BA-2 LIST OF DOCKETS CONTAINING TESTIMONY OF **T. BRIAN ALMON**

PUC DOCKET	. DESCRIPTION
NUMBER	
46042	 Application of Southwestern Public Service Company to Amend its Certificate of Convenience and Necessity for a Proposed 345-KV Transmission Line within Hale, Hockley, Lubbock, Terry, and Yoakum Counties (TUCO to Yoakum) [Direct Testimony – Route Selection, December 5, 2016] [Rebuttal Testimony – Route Selection, December 16, 2016]
45170	Application of Brazos Electric Power Cooperative. Inc. to Amend A Certificate
(of Convenience and Necessity for a 138-kV Double Circuit Transmission Line in Collin and Denton Counties [Direct Testimony – Route Selection, February 22, 2016]
44837	 Application of AEP Texas Central to Amend a Certificate of Convenience and Necessity for a Proposed 138-kV Transmission Line in Bee County and Goliad County, Texas [Direct Testimony – Route Selection, December 7, 2015] [Rebuttal Testimony – Route Selection, February 2, 2016]
44547	Application of Centerpoint Energy Houston Electric, LLC to Amend a Certificate of Convenience and Necessity for a Proposed 345-kV Transmission Line Within Grimes, Harris, and Waller Counties [Direct Testimony – Route Adequacy, June 15, 2015] [Direct Testimony – Route selection, July 13, 2015] [Rebuttal Testimony – Route selection, July 31, 2015]
43878	Application of Brazos Electric Power Cooperative, Inc. To Amend a Certificate of Convenience and Necessity for a 138-kV Double Circuit Transmission Line in Collin and Denton Counties [Direct Testimony – Route selection, July 26, 2015]
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43599	 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 [Direct Testimony – Route selection] (April 6, 2015)
41606	Joint Application of Electric Transmission Texas, LLC and Sharyland Utilities to Amend its Certificate of Convenience and Necessity for the North Edinburg to Loma Alta Double-Circuit 345-KV Transmission Line in Hidalgo and Cameron Counties, Texas [Direct Testimony – Route adequacy] (September 17, 2013)
38743	Application of Electric Transmission Texas, LLC to Amend its Certificate of Convenience and necessity for the Tesla to Edith Clarke to Clear Crossing to West Shackelford 345-kV CREZ Transmission Line in Childress, Cottle, Hardeman, Foard, Knox, Hasdell, Jones, and Shackelford Counties [Direct Testimony – Route selection] (January 7, 2011)
38480	Application of Texas-New Mexico Power Company for Authority to Change Rates [Direct Testimony – Self-insurance & storm hardening] (November 15, 2010)
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, Mason, Gillespie, Kerr and Kendall Counties [Direct Testimony – Route Selection (October 11, 2010)
38339	Application of CenterPoint Energy Houston, LLC for Authority to Change Rates [Direct Testimony – Self-insurance] (September 17, 2010)
38230	Application of Lone Star Transmission, LLC for a Certificate of Convenience and Necessity for the Central A to Central C to Sam Swith/Navarro Proposed CREZ Transmission Line [Direct Testimony – Route Selection] (August 26, 2010)
38361	Application of El Paso Electric Company to Reconcile Fuel Costs (Severed from PUC Docket 37690) [Direct Testimony – Recovery of Mine Closing Costs] (July 16, 2010)

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37744	 Application of Entergy Texas, Inc. For Authority to Change Rates and Reconcile Fuel Costs [Direct Testimony - Coal supply for Nelson 6 power plant and third-party power contract] (June 16, 2010)
37162	Application of Southwestern Electric Power Company for Authority to Reconcile Fuel Costs [Direct Testimony – Performance of Pirkey and Dolet Hills power plants] (May 13, 2010)
37448	 Application of LCRA Transmission Services Corporation to Amend its Certificate of Convenience and Necessity for the Gillespie to Newton 345-kV CRES Transmission Line in Gillespie, Llano, San Saba, Burnet, and Lampasas Counties, Texas [Direct Testimony – Route Selection] (January 20, 2010)
36025	Application of Texas-New Mexico Power Company for Authority to Change Rates [Direct Testimony – Self-insurance] (June 3, 2009)
35665	 Commission Staff's Petition for Selection of Entities Responsible for Transmission Improvements Necessary to Deliver Renewable Energy from Competitive Renewable Energy Zones [Direct Testimony – Assignment of TSP for CREZ Projects] (October 28, 2008) [Rebuttal Testimony – Priority & default projects and proposed joint venture] (November 14, 2008)
35763	Application of Southwestern Public Service Company for Authority to Change Rates, to Reconcile Fuel and Purchased Power Costs for 2006 and 2007, and to Provide a Credit for Fuel Cost Savings [Direct Testimony – Storm restoration and reserve amount] (October 21, 2008)
34800	Application of Entergy Gulf States, Inc. for Authority to Change Rates and to Reconcile Fuel Costs [Direct Testimony – Revenue Requirement and Fuel Phases] (April 18, 2008)
34077	Joint Report and Application of Oncor Electric Delivery Company and Texas Energy Future Holdings Limited Partnership Pursuant to PURA §14.101 [Direct Testimony – Reliability Standard] (September 21, 2007) [Direct Testimony – Support of Stipulation] (October 24, 2007)
33672	Commission Staff's Petition for Designation of Competitive Renewable Energy Zones [Direct Testimony – Designation of CREZ in Texas]

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	(April 24, 2007) [Rebuttal Testimony – Designation of CREZ in Texas] (May 21, 2007) [Corrected Direct and Rebuttal Testimony] (June 4, 2007)
33309	Application of AEP Texas Central Company for Authority to Change Rates [Direct Testimony – Self Insurance Plan and Catastrophe Reserve] (March 23, 2007)
32766	Application of Southwestern Public Service Company for: (1) Authority to Change Rates; (2) Reconciliation of its Fuel Costs for 2004 and 2005; (3) Authority to Revise the Semi-Annual Formulae Originally Approved in Docket No. 27751 Used to Adjust its Fuel Factors; and (4) Related Relief [Direct Testimony – Coal Issues] (January 12, 2007)
32018	 Notice of Violation by TXU Electric Delivery of PURA §38.005, Relating to Electric Service Reliability Measures and P.U.C. Subst. R. 25.52, Relating to Reliability and Continuity of Service [Direct Testimony – Appropriate Penalty] (July 13, 2006)
31824	Application of the Electric Reliability Council of Texas for Approval of the ERCOT System Administrative Fee [Direct Testimony – Review of Technical Expenditures] (January 23, 2006)
31064	Application of AEP Texas North Company and Taylor Electric Cooperative, Inc. for Clarification of Service Area Boundary in Taylor County [Direct Testimony – Boundary Determination] (November 8, 2005)
30143	Petition of El Paso Electric Company to Reconcile Fuel Costs [Direct Testimony – Purchased Power and Off-system Sales] (March 2, 2005)
29801	Application of Southwestern Public Service Company for Reconciliation of its Fuel Costs for 2002 and 2003, A Finding of Special Circumstances and Related Relief [Direct Testimony – Coal Inventory and Wheeling Expenses] (November 2, 2004)
28813	Petition to Inquire into the Reasonableness of the Rates and Services of Cap Rock Energy Corporation [Direct Testimony – Funding Catastrophe Reserve] (September 13, 2004)
29,526	 Application of Centerpoint Energy Houston Electric LLC, Reliant Energy Retail Services, LLC and Texas Genco LP to Determine Stranded Costs and Other True-Up Balances Pursuant to PURA §39.262 [Direct Testimony – Environmental Cleanup Costs] (June 7, 2004)

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28906	Application of LCRA Transmission Services Corporation to Change Rates [Direct Testimony – Allowable expenses and post test-year adjustments] (May 11, 2004)
29206	Application of Texas-New Mexico Power Company, First Choice Power, Inc. and Texas Generating Company, LP., To Finalize Stranded Costs Under PURA §39.262 [Direct Testimony – Price re-determination of lignite price]
. 28840	(April 2, 2004) Application of AEP Texas Central Company for Authority to Change Rates [Direct Testimony – Plant in Service] (February 17, 2004)
28045	Application of Southwestern Electric Power Company for Authority to Reconcile Fuel Costs [Direct Testimony – Reasonable and Necessary Expenses and Prudent Management] (November 12, 2003)
27576	Application of Texas-New Mexico Power Company for Reconciliation of Fuel Costs [Direct Testimony – Price predetermination & alternate fuels] (July 25, 2003)
26194 '	Petition of El Paso Electric Company to Reconcile Fuel Costs [Direct Testimony – Necessary Expenses and Off-System Sales] (April 24, 2003)
26195	Joint Application of Texas Genco, LP and Centerpoint Energy Houston Electric, LLC to Reconcile Eligible Fuel Revenues and Expenses Pursuant to Subst. R. 25.236 [Direct Testimony – Recovery of Post-Mine Reclamation Cost]
- 25778	 (January 7, 2003) Emergency Complaint of Henry A. Miller, Et Al. Against American Electric Power Company and Request for an Emergency Cease and Desist Order [Direct Testimony – Issues related to Ordering Paragraphs in Docket No. 21741] (August 20, 2002)
24835	Petition of Reliant Energy, Incorporated for Approval of Environmental Cleanup Costs Plan [Direct Testimony – Technical Issues of Application] (January 15, 2002)
20314	Application of Hino Electric Power Company for a Certificate of Convenience and Necessity in Cameron, Willacy, and Hidalgo Counties [Direct Testimony – Technical Issues of Application] (October 25, 2001)
20125	Application of Beaumont Power & Light Company for a Certificate of Convenience and Necessity in Jefferson County, Texas [Direct Testimony – Technical Issues of Application] (October 25, 2001)

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19950	Application of Corpus Christi Power & Light Company for a Certificate of Convenience and Necessity in Nueces and San Patricio Counties [Direct Testimony – Technical Issues of Application] (October 25, 2001)
23550	Application of Entergy Gulf States, Inc. for the Authority to Reconcile Fuel Costs [Direct Testimony – Nuclear PBR and Outage] (July 13, 2001)
23477	Application of West Texas Utilities Company for the Authority to Reconcile Fuel Costs [Direct Testimony – Fuel Purchases] (August 20, 2001)
22356	 Application of Entergy Gulf States, Inc. for Approval of Unbundled Cost of Service Rate Pursuant to PURA §39.201 and Public utility Commission Substantive Rule §25.344 [Direct Testimony – Environmental Cleanup Cost Recovery] (January 16, 2001)
22355	 Application of Reliant Energy Incorporated for Approval of Unbundled Cost of Service Rate Pursuant to PURA §39.201 and Public Utility Commission Substantive Rule §25.344 [Direct Testimony – Transmission and Distribution Capital Expenditures] (December 18, 2000)
22350	 Application of TXU Electric Company for Approval of unbundled Cost of Service Rate Pursuant to PURA §39.201 and Public Utility Commission Substantive Rule §25.344 [Direct Testimony – Environmental Cleanup Cost Recovery] (October 13, 2000)
22352	Application of Central Power and Light Company for Approval of Unbundled Cost of Service Rate Pursuant to PURA §39.201 and Public Utility Commission Substantive Rule §25.344 [Direct Testimony - Environmental Cleanup Cost Recovery] (October 6, 2000)
22344	 Generic Issues Associated with Application for Approval of Unbundled Cost of Service Rate Pursuant to PURA §39.210 and Public Utility Commission Substantive Rule §25.344 [Direct Testimony – O&M Escalators] (July 27, 2000) [Rebuttal Testimony](August 3, 2000) [Errata for Direct](August 3, 2000)
17525	 Application of Southwestern Public Service Company for Certification of Qualifying Facility Purchased Power Contract under Section 2.209 of PURA 95 [Direct Testimony – Fuel Price Risk (August 19, 1997)

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16628	Petition of the Lower Colorado River Authority to Reconcile its Fuel Revenues and Expenses and For Other Relief [Direct Testimony – Coal, Gas, Oil & Purchased Power Reconciliation] (May 8, 1997)
15195	Application of Texas Utilities Electric Company for a Reconciliation of Fuel Costs [Direct Testimony – Mine Productivity (October 7, 1996)
14965	Application of Central Power and Light Company for Authority to Change Rates and Reconcile Fuel Costs [Direct Testimony – Fuel PBR in Competitive Issues Phase] (July 18, 1996)
15102	Application of Gulf States Utilities Company to Reconcile Its Fuel Costs, for Permission to Delay Requesting a Surcharge, or in the Alternative, for a Surcharge to Recover Under-recovered Fuel Expense [Direct Testimony – Reconciliation of Fossil Fuel] (July 8, 1996)
14893	Petition of Sam Rayburn G & T Electric Cooperative, Inc. for Authority to Change Rates [Direct Testimony – Coal Inventory, Non-reconcilable and Eligible Fuel Expense] (January 18, 1996)
14499	Petition of Southwestern Public Service Company for Findings of Special Circumstances and For Associated Waivers [Direct Testimony] (November 21, 1995)
12065	Complaint of Kenneth D. Williams against Houston Lighting & Power Company [Direct Testimony – Trinity Mine Investment] (November 29, 1994)
12820	Petition of the General Counsel for and Inquiry into the Reasonableness of the Rates and Services of Central Pore and Light Company [Direct Testimony – Plant Held for Future Use] (October 17, 1994)
12855	 Application of Southwestern Electric Power Company to Reconcile Fuel Costs and Request for Accounting Order [Direct Testimony – Coal Issues] (August 10, 1994) [Supplemental Testimony] (August 29, 1994)
11520	Petition of the General Counsel for an Inquiry into the Reasonableness of Rates and Services of Southwestern Public Service Company [Direct Testimony – Revenue Requirement Phase] (July 29, 1993)

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11735	Application of Texas Utilities Electric Company for Authority to Change Rates [Direct Testimony – Fuel Phase] (July 13, 1993) [Direct Testimony – Revenue Requirement Phase (July 13, 1993)
11292	Application of Entergy Company and Gulf States Utilities Company for Sale, Transfer, or Merger [Direct Testimony – Fuel Price Forecast (January 8, 1993) [Surrebuttal Testimony] (February 12, 1993)
10894	Application of Gulf States Utilities Company to Reconcile Fuel Costs, Establish New Fixed Fuel Factors, and Recover its Under-recovered Fuel Expenses [Direct Testimony – Fuel Price Forecast, Fuel Reconciliation] (August 28, 1992)
11011	Petition of Southwestern Public Services Company for a Fuel Reconciliation [Direct Testimony – Fuel Reconciliation] (August 4, 1992)
10982	 Application of Sam Rayburn G&T Electric Cooperative, Inc. for Authority to Change Rates [Direct Testimony – Purchase Power, Non-reconcilable Fuel Expenses, Fuel Price Forecast, Fuel Inventory, Fuel Reconciliation] (June 3, 1992)
10092	Petition of Houston Lighting & Power Company for Reconciliation of Fuel Costs [Direct Testimony – Fuel Reconciliation] (March, 1991) [Supplemental Testimony] (June21, 1992)
10200	Application of Texas-New Mexico Power Company for Authority to Change Rates, Prudence Phase [Direct Testimony – Fuel Inventory, Fuel Price Forecast] Prudence (November 8, 1991) Revenue Requirement (December 13, 1991) Fuel (December 13, 1991)
9850	Petition of Houston Lighting & Power Company for Authority to Change Rates [Direct Testimony – Fuel Inventory, Depreciation, Non-reconcilable Fuel Expenses] (February 19, 1991)
9300	Application of Texas Utilities Electric Company for Authority to Change Rates [Direct Testimony – Fuel Reconciliation] (June, 1990)
9030	Petition of the General Counsel for a Fuel Reconciliation for Southwestern Public Service Company [Direct Testimony – Fuel Reconciliation] (May, 1990)

9561	Application of Central Power and Light Company for Authority to Change Rates [Direct Testimony – Fuel Reconciliation, Fuel Price Forecast, Fuel Inventory] (August, 1990)
9491	Application of Texas-New Mexico Power Company for Authority to Change Rates [Direct Testimony – Fuel Price Forecast, Fuel Inventory] (July, 1990)
9427	Application of Lower Colorado River Authority for Authority to Change Rates [Direct Testimony – Prudence of Cummins Creek] (July, 1990)
8900	Petition of the General Counsel for a Fuel Reconciliation for Southwestern Electric Power Company [Direct Testimony – Coal and Lignite Reconciliation] (January, 1990) [Supplemental Testimony] (January, 1990)
8646	Petition and Statement of Intent of Central Power and Light Company to Change Rates [Direct Testimony – Fuel Reconciliation, Fuel Management, Coal Inventory, Coal Price Forecast, Non-reconcilable Fuel Expenses, Plant Held for Future Use] (May – December, 1989)
8595	 Application of Sam Rayburn G & T Electric Cooperative, Inc. for Authority to Change Rates [Direct Testimony – Fuel Reconciliation, Non-reconcilable Fuel Expenses, Fuel Price Forecast] (April, 1989)
8588	Application of El Paso Electric Company for Reconciliation of Fuel [Direct Testimony – Fuel Reconciliation] (August, 1989)
8425	Petition of Houston Lighting & Power Company for Authority to Change Rates, Phases I & II [Direct Testimony – Fuel Reconciliation. Non-reconcilable Fuel Expenses] (March, 1989)
8400	Application of Lower Colorado River Authority to Change Rates [Direct Testimony – Fuel Reconciliation, Non-reconcilable Fuel Expenses, Fuel Price Forecast, Prudence Review] (March, 1989)
6692	Application of Texas-New Mexico Power Company for Certification of a Lignite- Fired Generation Station in Robertson County, Texas (Remand) [Direct Testimony – Fuel Price Forecast] (June, 1990)
8095	Application of Texas-New Mexico Power Company for Authority to Change Rates

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[Direct Testimony - Purchased Power Expenses] (July, 1988)

- 8280 Application of Southwestern Electric Power Company for Authority to Increase Interim Fixed Fuel Factors [Direct Testimony - Fuel Price Forecast] (November, 1988)
- 8328 Petition of West Texas Utilities Company for Order to Increase Fixed Fuel Factors [Direct Testimony - Fuel Price Forecast] (November, 1988)

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EXHIBIT BA-3

Criteria for Route 11

LAND USE	
Total Length (feet) .	10,74
. Total Length (miles)	<u>. </u>
Parallel Utility Lines (electrical distribution and/or telephone lines) (feet)	7,43
Parallel Roadways (feet)	9,64
Parks/Recreation Areas crossed (#)	(
Parks/Recreation Areas - # within 1,000 feet*	
Length Across Parks/Recreation Areas (feet)	
Length of Parks Visual Foreground (feet)	10,74
Length Across Commercial Areas (feet)	25
STRUCTURES	
Habitable Structures - # within 300 feet^*	· · · ·
CULTURAL RESOURCES	
Historical/Archeological Sites - # within 1,000 feet*	
Cemeteries - # within 1,000 feet*	
Length Across PALM (feet)	
ECOLOGICAL RESOURCES	
NHD Stream Crossings (#)	
NHD Open Water (linear feet)	
100-Year Floodplain (linear feet)	· · <u>1</u>
National Wetland Inventory (NWI) - # wetland polygons crossed	
NWI - linear feet of wetland polygons crossed	
Woodland Impacts (linear feet)	
Length Across Pastureland	4,9
ROAD CROSSINGS	
Federal Highway (#)	

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. State Highway (#)	2
Farm to Market (#)	0
County Road/ Local Road (#)	3
Length Across Highway Visual Foreground (feet)	10,745
COST+	
Total Estimated Cost (\$)	25,486,507

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EXHIBIT BA-4

Criteria for Routes 7, 8, 12, 17 and 25

ROUTE	7	8	12	17	25
LAND USE					
Total Length (feet)	12,675	12,812	12,383	11,896	11,385
Total Length (miles)	2.4	2.43	2.35	2.25	2.16
Parallel Utility Lines (electrical distribution and/or telephone lines) (feet)	9,950	9,950	5,768	6,103	5,768
Parallel Roadways (feet)	12,163	12,163	10,710	10,353	9,837
Parks/Recreation Areas crossed (#)	0	0	2	2	2
Parks/Recreation Areas - # within 1,000 feet*	2	2	3	3	3
Parallel Property Boundaries (feet)	> 0	0	0	0	0
Length Across Parks/Recreation Areas (feet)	0	0	1,523	1,523	1,523
Length of Parks Visual Foreground (feet)	12,675	12,812	12,383	11,896	11,385
Length Across Commercial Areas (feet)	251	251	3,302	3,302	3,302
STRUCTURES					
Habitable Structures - # within 300 feet^*	. 2	2	. 12	14	11
Other Installations - # within 2,000 feet*	0	0	0	0	0
Heliports - # within 5,000 feet*	0	0	0	0	0
CULTURAL RESOURCES	ľ				
Historical/Archeological Sites - # within 1,000 feet*	0	0	0	0	0
Cemeteries - # within 1,000 feet*	0	. 0	0	0	0
Length Across PALM (feet)	0	0	0	0	0
ECOLOGICAL RESOURCES					

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		1			
NHD Stream Crossings (#)	2	2	2	2	2
NHD Open Water (linear feet)	·47	47	0	0	0
100-Year Floodplain (linear feet)	111	. 111	251	251	251
National Wetland Inventory (NWI) - # wetland polygons crossed	1	1	0	0	0
NWI - linear feet of wetland polygons crossed	91	91	0	. 0	0
Parallel to Creeks (feet)	0	0	· 0	1,425	0
Woodland Impacts (linear feet)	678	678	. 311	311	311
Length Across Pastureland	7,492	7,492	6,320	5,864	5,447
ROAD CROSSINGS	}				
State Highway (#)	.1	1	0	0	0
County Road/ Local Road (#)	3	4	5	5	_5
Length Across Highway Visual Foreground (feet)	12,675	12,812	12,383	11,896	11,385
COST					
Total Estimated Cost (\$)	27,643,116	26,861,312	-29,160,152	28,301,684	27,475,289

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Exhibit BA-5 NTTA Policy For Use of ROW

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	BD 6.4
Ð	Policy for Policy for Use of NTTA Rights-of-Way by Individuals or Other Entities October 1999
	Evaluating Requests
	When receiving a request for use of NTTA right-of-way, the following evaluation will be used in formulating a response:
	 Does the proposed use adversely affect the safe and efficient operation or maintenance of the NTTA facility?
	• Does the NTTA have an existing or future transportation related use planned or identified for the property?
	• Could the property be strategic or useful in maintaining roadway operations, either now of in the future?
	• Does another transportation or governmental entity has a potential use for the property that could be adversely affected? (TxDOT, DART, The T, counties, cities).
0	If (1) no such adverse effects are identified and (2) no such uses are planned or potentially envisioned, then notice of such request shall be published in at least two newspapers of general circulation in the NTTA constituent counties which shall identify the NTTA property and invite other interested parties to submit competing requests within fifteen (15) days following the last notice. The NTTA may require the petitioner(s) to provide the following information to make a formal request for use of the property:
,	• Legal description and exhibit (drawn to scale) of the property:
	• Statement describing the proposed use of the property;
	 Identification of proposed access to the site, and indication that preliminary discussions have taken place with those entities required to approve said access;
	 Description of proposed security measures, including but not limited to security lighting, fencing and surveillance facilities;
	 Evaluation of whether the proposed use will affect the ability of emergency or NTTA vehicles and/or personnel to access the facility to respond to an emergency situation, perform maintenance or repair work, or undertake other activities; and
\supset	• Description of proposed landscaping of the area.

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BD 6.4

Based upon said information, NTTA staff will notify adjacent municipalities of the request(s) and provide an opportunity for said municipalities to comment about the proposed use and the compatibility of the proposed use with other planned uses in the area.

Accepting A Request

Upon completion of this information, the staff will present the request(s) to the NTTA Board for consideration. The Board <u>may</u> accept a request and authorize staff to develop a lease for the Board's consideration. Any said lease shall include the following:

- A lease term not to exceed five (5) years, with subsequent five (5) year renewal(s) at the discretion of the Executive Director;
- A lease fee based on general market conditions;
- Acquisition and maintenance of liability insurance by the tenant in an amount to be determined by staff counsel;
- Indemnification of the NTTA by an adequately capitalized entity from all liabilities arising from use of the property;
- Minimum operational criteria;
- Revocation procedure for failure to meet and maintain minimum standards; and
- Early termination rights (absent petitioner's default) if necessary to permit (1) the safe and efficient operation or (2) the expansion or modification of the NTTA facility; under appropriate circumstances, the lease may provide for a stipulated "make-whole" payment by the NTTA in consideration for any early termination.

The NTTA board of Directors shall approve any initial lease agreement.

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Exhibit BA-6

Feeder Peak Loads (MW)



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PUC Docket No. 46429 , SOAH Docket No. 473-17-1552

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Almon-Direct

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Page 55

Exhibit BA-8

Letter from LCRA to TxDOT

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Almon-Direct



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	 Overhang or displacement of wires into the TxDOT ROW when paralleling IH-10 for short distances in constrained areas due to required transmission line 	
	 placement or irregularity in the TxDOT property line. Structure and transmission line placement in TxDOT ROW in extremely constrained areas or at rural interchange locations preferable to simply spanning the interchange outside of controlled access locations. 	
	in my previous letter, two locations in the Kerrville area were left to further study to	÷
	determine the most effective solution for all parties involved. At the most recent meeting on September 13 th , 2011, among TxDOT, LCRA TSC, and FHWA an alignment for the transmission line facilities was agreed to at both locations, as follows:	
ē	• In the Harper Road (FM 783) area (See Exhibit 16), a route adjustment that will take the line across the intersection in TxDOT ROW in a way where hazards to traffic will be minimal. This will reduce the impact of the transmission line	
	project on nearby landowners, and benefit the City of Kerrville from a development potential standpoint.	
	 At the intersection of I-10 and State Highway 16, all parties agreed that a variation on the "Green/Purple" route modification, which takes a straight path across the intersection is the best option for the line (See Exhibit 17). This option places 4-5 poles in TXDOT right of way including one behind the "Welcome to 	
	Kerville" sign, which is in accordance with the wishes of the City of Kerville as expressed in their letter addressed to TxDOT on August 11 th , 2011 (See Exhibit 19). LCRA TSC also agreed to place the poles in such a way where TxDOT will	
	be able to lengthen and straighten its existing westbound exit ramp into the intersection into the future without conflict between the facilities. In sum, this alternative will allow the LCRA TSC facilities to be located in TxDOT right-of-way in a safe, reliable and acceptable way to both parties while greatly reducing impacts on several landowners and area structures, including 17 trailer homes that would have otherwise been relocated or moved to another location on the	
	property.	
	For all 18 locations ieviewed by TxDOT, FHWA and LCRA staff, the following tasks will be completed as part of the detailed design of the transmission line:	
	 Locations involving more than temporary construction access will require permit applications with appropriate exception requests, when necessary, based on the Texas Administrative Code, as with any utility infrastructure in TxDOT ROW. Some locations may require inview and approval by the FHWA 	ł
	 LCRA TSC will prepare a Vegetation Management Plan for the areas where TxDOT ROW may be impacted by vegetation management required for the safe and reliable operation of the transmission line. 	
	 LCRA TSC and TxDOT will develop a document detailing future cost obligations should TxDOT require relocation of any of the LCRA TSC facilities to be located within the TxDOT ROW. 	
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LOWER	ČOLORADO RIVER AUTHORITY	2
LOWER	COLORADO RIVER AUTHORITY	3

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As you know, the Public Utility Commission (Commission), which ordered LCRA TSC to construct this transmission line, believed that I-10 formed the most natural corridor through the Hill Country, and has expressed great interest in seeing LCRA TSC coordinate its construction activities with TxDOT. This intent is clearly stated in Paragraph 21 of the Commission's Order in Docket No. 38354 where the Commission added what to LCRA TSC's knowledge is an unprecedented ordering paragraph requiring best efforts by LCRA TSC to coordinate and reach agreement with TxDOT where possible: Ordering Paragraph 21 reads:

LCRA shall engage in discussions with the Texas Department of Transportation and use its best efforts to reach agreement with the Department to use state right-of-way along the proposed project where it parallels I-10. These discussions shall not unreasonably delay the completion of this project and, in any event, if agreement has not been reached on or before September 1, 2011, then LCRA shall proceed with construction on the proposed project.

At this point in time, LCRA TSC believes that acknowledgement of the substantial progress and the conceptual approval of these alternatives is appropriate and should be reported to the PUC. We understand, as does TxDOT staff, that there is still much detailed design work ahead which will continue in the same constructive and cooperative manner that we have experienced to date.

LCRA TSC proposes that this document serve as an acknowledgement of concurrence on the route and conceptual design at the 18 locations and the anticipated development of the necessary steps to complete the detailed design and execute the necessary permitting documentation as the detailed design is completed for the transmission line. To that end, I have included an acknowledgement signature for TxDOT. As with the previous letter, LCRA TSC proposes to file a copy of this document with attachments with the PUC to document the progress on this project in compliance with Ordering Paragraph 21 in the Final Order of PUC Docket 38354.

LOWER COLORADO RIVER AUTHORITY

Again, LCRA TSC continues to appreciate the interest as well as the time and effort that TxDOT has invested in the collaborative process for this project, and stands ready to help in any way going forward

If you or your staff have any questions or desire any additional information, please feel free to contact me at (512) 369-4485, or Nathan Langhlin at (512) 369-4505.

Very truly yours,

Curtis Symank, J.E. Engineering Supervisor Transmission Line Design

Acknowledgement: Ibribio Garza, J.H

Director, Maintenance Division Texas Department of Transportation

Attachments

LOWER COLORADO RIVER AUTHORITY

Exhibit BA-9

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PUC Docket 34276

Cornelius-Pierce Need Study

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CRAIG RANCH SUBSTATION POLICY 301 STUDY

TEXAS 49 COSERV

Corinth, Texas

FOR

Brazos Electric Cooperative, Inc. Transmission and Distribution Planning - Operations Committee

Prepared by:

CORNELIUS-PIERCE CONSULTING ENGINEERS, INC.

Fort Worth, Texas

October 2006

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I. Executive Summary

INTRODUCTION

This Study documents the Policy 301 Study for the proposed Craig Ranch Substation of CoServ Electric Cooperative, Inc. (*the Cooperative*). This Study was prepared at the request of the management of the Cooperative due to load growth and potential load growth along the Highway 121 corridor. The corridor traverses an area of growth that includes Collin County. The area's historical growth rate indicates continued expansion of residential housing developments, office building complexes, and retail/commercial complexes.

For the purposes of this Study, the area from Highway 75 in the east, along Highway 121, to Custer Road in the west will be used. The study area includes tracts located in the city limits of Allen and McKinney. Growth along highway 121 continues to increase as more developers use highway 121 as an easy route to reach the many acres available for development. Highway 121 is currently being expanded into a limited access, multiple-lane highway that will allow growth to continue along the corridor. Currently there are several large business complexes and residential subdivisions under construction with more in the planning stages.

The Custer and Lebanon Substations provide electric service to an area in Collin County that includes portions of the city limits of Allen, McKinney, and Frisco, including areas north and south of Highway 121, between Highway 75 south of McKinney and Highway 289 in Frisco. The substation service areas are projected to have growth rates of 10% to 12%, with growth rates as high as 30% possible in some areas according to the

economic development forecast for Collin County. This growth is due to commercial as well as residential development.

Four circuits out of Custer Substation and one circuit out of Lebanon Substation feed the areas from Custer Road to Highway 75. Substation transformer as well as feeder loading will exceed design criteria by 2008 in the Custer area and 2009 in the Lebanon area. As the load grows, regulated voltage drop begins to exceed the 8 volts required by the design criteria. As new loads are added (based on known and unknown facility installations) design criteria violations will become greater. In addition, with land costs soaring, new right of way for additional feeders out of each substations will be at a premium. Known right of way costs for the area are between \$8 and \$18 per square foot.

Load forecast projections, prepared using an econometric methodology, indicate continued, steady growth through at least 2012. This load growth is completely supported by demographic forecasts and land use inventories of US Census Tracts, provided by governmental agencies, for the area.





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SUMMARY of FINDING

Three options were developed in the Study, Plan A, Plan B, and Plan C. Plan A developed the future system through continued service to the areas from the Custer and Lebanon Substations through 2012. Plan B developed the system through construction of a new Sloan Creek Substation in 2009. A third option, Plan C, which was considered, was constructing a new transmission line and a new substation in 2009.

The Study utilized loads that were forecast based upon the current Power Requirements Study and historical data for the Custer and Lebanon service areas. The analysis evaluated the difference in the costs of Cooperative distribution losses; distribution, transmission and substation improvements; and annual fixed charges. The total annual costs developed for each year were converted to a present worth value to allow comparison of the Plans.

The analysis for the study area indicated that Plan C, the construction of the Craig Ranch substation, would be the most economical means of service through the planning period. Table 1 on Page 8 lists the total costs, annual present worth, and total cost of annual improvements for each plan. These costs have been developed in detail in the following pages of this Study. For the study period, beginning in 2006 and ending in 2012, Plan A has a total cost of \$44,424,594, Plan B has a total cost of \$42,590,698, and Plan C has a total cost of \$36,773,244. Plan C exhibits a total cost savings over Plan A of \$7,651,350 and total cost savings over Plan B of \$5,817,454.

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RECOMMENDATION

It is recommended that Plan C be adopted for the study area. In recommending Plan C, several purposes are served. First, Plan C is the most economical; secondly, feeder length is reduced, allowing for higher growth in the study area; and lastly, the cost of distribution system losses are reduced by 10.3% compared to Plan A.



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CoServ Electric Cooperative, Inc.

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Craig Ranch Substation - Policy 301 Study

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Table 1: Comparison of Costs of Policy 301 Plans

	Upgrading E (Cu	Plan A xisting Distribut ster and Lebanc	tion Circuits on)	Construct (Exis	Plan B New Sloan Cree sting Transmissi	⊧k Station ion)	Construct (New	Plan C New Craig Ranc Transmission L	ch Station Line)
	Total Cost of Annual Improvements	Present Worth of Fixed Costs and Losses	Total Annual Cost**	Total Cost of Annual Improvements	Present Worth of Fixed Costs and Losses	Total Annual Cost**	Total Cost of Annual Improvements	Present Worth of Fixed Costs and Losses	Total Annual Cost**
Year 2006	\$3,285,420	\$1,188,027	\$4,473,447	\$3,285,420	\$1,188,027	\$4,473,447	\$3,285,420	\$1,188,027	\$4,473,447
2007	\$202,400	\$849,003	\$1,051,403	\$202,400	\$849,003	\$1,051,403	\$202,400	\$849,003	\$1,051,403
2008	\$4,472,610	\$1,401,600	\$5,874,210	\$4,472,610	\$1,401,600	\$5,874,210	\$4,472,610	\$1,401,600	\$5,874,210
2009	\$9,348,800	\$2,008,256	\$11,357,056	\$12,515,100	\$2,257,697	\$14,772,797	\$13,728,600	\$2,421,491	\$16,150,091
2010	\$5,967,200	\$1,505,436	\$7,472,636	\$8,666,000	\$1,663,798	\$10,329,798	\$5,411,200	\$1,301,305	\$6,712,505
2011	\$2,306,850	\$1,063,696	\$3,370,546	\$0	\$726,102	\$726,102	\$0	\$723,233	\$723,233
2012	\$9,219,300	\$1,605,997	\$10,825,297	\$4,296,400	\$1,066,541	\$5,362,941	\$1,041,600	\$746,754	\$1,788,354
Total	\$34,802,580	\$9,622,014	\$44,424,594	\$33,437,930	\$9,152,768	\$42,590,698	\$28,141,830	\$8,631,414	\$36,773,244

** - Total Annual Cost is the sum of the Total Cost of Annual Improvements plus the Present Worth of Fixed Costs and Losses

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PURPOSE OF STUDY

The Policy 301 Study provides the management of the Cooperative and Brazos with a cost/benefit analysis for the long term service options in the service area of the member distribution Cooperative. Sound system and economic planning is essential to provide orderly and economical development of the Brazos and CoServ systems, which helps assure adequate service at the lowest cost to the consumer. Prudent planning provides an orderly development of the system by ensuring that new investment in facilities corresponds to load growth and revenue, and maximizes opportunities to improve the quality and reliability of service. The three main components of the system; the transmission facilities, the substation facilities, and the distribution facilities, should be coordinated in the plan to maintain a reasonable economic balance.

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COST APPLICATION

After completing the distribution system design, a list of system improvements by Plan level and Service Area was prepared for each Plan. System improvement costs for the Plans are included in the latter pages of this Study.

Investment costs and fixed costs for each plan's distribution system was obtained in order

to compare the economic aspects of the plans. In addition, the procedure was repeated for

transmission and substation improvements. The combination, of the transmission,

substation, and distribution costs together with the cost of distribution losses and annual

cost of operation produced an overall economic plan investigation.

The Plans include the following categories of costs:

- (1) Cost of Distribution Losses the cost of distribution losses were evaluated based upon the estimated unit cost of power to the Cooperative. Distribution losses were included as the Plans may have differing voltage levels, circuitry and loading.
- (2) Distribution Improvement Cost the cost of distribution improvements, adjusted by inflation, within each service area thereby allowing a comparison of areas for different plans.
- (3) Transmission Improvement Cost this cost indicates the transmission and substation costs for each service area. For required improvements which serve multiple service areas, the cost was apportioned by the ratio of service area kW to the total kW served by that improvement.
- (4) Total Transmission and Distribution Improvement Cost the total cost of improvements required of the distribution and transmission systems to serve forecast future load levels.
- (5) System Annual Fixed Cost Fixed costs were set at 15.00 percent per annum of the total improvement plant for CoServ Electric Cooperative, and 15.44 percent for Brazos Electric Cooperative. Fixed cost items include interest, depreciation, insurance, taxes, and operation and maintenance as listed in Bulletin 60-9 and outlined in the table below.

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- (6) Total Annual Cost A summation of the annual fixed costs, cost of distribution losses and cost of wholesale energy.
- (7) Present Worth of Annual Charges A present worth analysis of the total annual costs used as a means of evaluating the Plans' costs while negating the effects of inflation.

Distribution, transmission and substation improvement costs were directly assigned to a year of the plan.
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II. Study Forecast Loads

Substation or Metering Point	2007 KW	2008 KW	2009 KW	2010 KW	2011 KW	2012 KW
AUBREY A	13116	14165	15298	16063	17027	18389
AUBREY B	15206	16726	18399	14239	15662	16915
AUBREY C	11445	12360	13349	14417	15570	16816
BRIDGES A	42338	45694	44333	47428	49800	53784
BRIDGES B	42167	37959	42215	46642	49645	53617
BRIDGES C	. 28300	39710	43022	46273	49797	53781
CANYON A	18920	34215	35886	37644	39493	42652
CANYON B	48110	37471	40428	43640	46609	50338
CHISOLM	11660	12826	14108	15519	18071	19517
CROSS TIMBERS	31993	37751	44546	40565	47867	51696
CUSTER A	43904	36449	38293	41356	44665	48238
CUSTER B	49583	47941	40404	43636	47127	48397
CUSTER C	49836	43269	39316	42461	45858	49527
CUSTER D	0	37995	37294	40278	43500	49480
FRISCO A	41022	45124	31677	34211	36948	39904
FRISCO B	38310	41434	41835	45182	48796	52700
HEBRON A	36426	40068	44075	47601	51409	55522
HEBRON B	43892	45648	47474	51272	55374	59804
HICKORY CREEK	3801	3839	3877	4187	4522	4884
HIGHLAND A	12055	12296	12542	13545	14629	15799

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Craig Ranch Substation - Policy 301 Study

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CoServ Electric Cooperative, Inc.

II. Study Forecast Loads (cont).

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Substation or	2007	2008	2009	2010	2011	2012
Metering Point	ΚW	ΚW	κw	. KW	KV	, KW
HIGHLAND B	39960	42358	44899	48491	52370	56560
- KRUM	17409	19150	17065	18430	19905	21497
LAKE DALLAS	618	624	631	·681	736	795
LEBANON A	27742	34516	37967	41004	44285	47827
LEBANON B	42713	46984	38351	41419	44733	48311
LEBANON C	30977	34075	37482	40481	43719	47217
LEWISVILLE	11609	12073	12556	13560	14645	15817
LEWISVILLE SW A	14533	15115	15719	16977	18335	19801
McKAMY A	33610	35290	37055	40019	43221	46679
McKAMY B	35310	37075	38929	42043	45407	49039
MOUND	30633	32471	34419	37173	40146	43358
MOUNTAIN		, ,	8			
SPRINGS	1264	1391 -	1530	1652	1785	1927
MUSTANG			-	0	0	0
ŇAVO	24673	29238	34647	37419	40412	43645
PANTHER CREEK	30406	35093	48561	52446	56642	61173
PONDER	*		-	0	0	0
PROSPER			17660	19073	20599	22247

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Craig Ranch Substation - Policy 301 Study

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II. Study Forecast Loads (cont).

Substation or	2007	2008	2009 KVN	2010 KW	2011 KW	Z01Z	
Metering Point	Å	MU					1
		•				01000	
	11061	13161	18477	19955	21552	232/0	
RUANUKE A	1 304	2			C	0	
ROANOKE B				5		00705	
	16003	17271	18048	19492	10012	CC/22	
RECIUN HUAD	02201				11750	12690	
SANGER NORTH A	9314	9686	100/4	0000			
				0	0	5	
SIACEY HUAD					5507	5947	
VALLEY VIEW	4364	4539	4/21	2033			
	c	c	41302	28557	38842	45949	
CHAIG HANCH A	5	>		00000	21203	45036	
CRAIG RANCH B	0	0	Э	Z0043	000	ç	
•					1060300	1483286	
TOTALS	965476	1063050	1158464	1249000	2062061		-1

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DESIGN CRITERIA

The following design criteria were developed as an aid in determining the improvements required. All service areas were evaluated with respect to the criteria to maintain adequate and dependable service to each consumer.

- 1.) The maximum regulated voltage drop on the primary distribution system not to exceed 8 volts (120 volt base). The maximum unregulated voltage drop on the primary distribution system not to exceed 16 volts (120 volt base) except for minor single-phase taps, which may be regulated individually.
- 2.) The following equipment will not be thermally loaded by more than the percentage shown of its name plate rating:

100% - Power Transformers

70% - Substation and line regulators

70% - Reclosers and line fuses

- 3.) Conductor will not be thermally loaded by more than 70% of its maximum current carrying capacity.
- 4.) Single-phase lines will not be loaded more than 60 amps at peak load for sectionalizing considerations.
- 5.) Poles and/or crossarms to be replaced if found to be physically deteriorated by visual inspection and/or test.
- 6.) Primary distribution lines to be rebuilt and/or relocated if found to be unsafe or in violation of the National Electric Safety Code, Vernon's Annotated Civil Statutes and relevant RUS Bulletins.

- 7.) New lines and line conversions to be built according to the standards of the ultimate primary voltage levels as recommended in the 1988 Long Range Plan.
- 8.) New primary conductor size to be determined on a case by case basis using recommended procedures as described in RUS Bulletin 60-9 utilizing currently known constants and estimated variables. The final proposed conductor may be modified to conform with the Cooperative's standard sizes and with respect to the conductor, voltage levels recommended in the Long Range Plan.
- 9.) All new primary construction to be overhead except where underground is required to comply with the governmental and environmental regulations, local restrictions, favorable economics, or requested in the strict accordance with the existing tariffs and/or policies of the Cooperative.
- 10.) All new transmission and distribution lines will be designed and constructed according to the NESC, CoServ standard construction specifications and guidelines and relevant RUS construction specifications and guidelines.
- 11.) Improvement projects generally to be determined by the following hierarchy of alternative solutions based on economic benefit.
 - a.) Add Voltage Regulator and/or Capacitors.
 - b.) Voltage Conversion of Existing Lines.
 - c.) Multi-Phase Existing Lines.
 - d.) Construct New Tie Line's.

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- e.) Increase Conductor Size.
- f.) Construct New Circuit.
- g.) Construct New Substation.

III. Plan A - Continued Service from Custer and Lebanon Substations

The goal of Plan A is to serve the entire area as long as possible from the existing Custer and Lebanon Substations. The Custer and Lebanon Substations will be upgraded and distribution improvements will be implemented as required.

In 2008, Custer D should be installed, reducing the peak load from 54,364 kW on Custer A to 36,449 kW, with Custer D relieving a total of 37,995 kW. Lebanon B will exceed transformer ratings (51,682 kW) in 2009, requiring Lebanon D to be installed. Custer E will be required in 2010 to relieve load on Custer B and C. And lastly, Custer F will be required by 2012 to relieve excessive loading on Custer A and D. A chart showing load levels for each transformer during the study period is located on page 18.

Additional "express" feeders as well as upgrading the existing system from Custer and Lebanon will be required throughout the study period to maintain less than an 8 volt drop along the farther reaches of the study area and to eliminate conductor design criteria violations.

Right-of-way costs play a vital role in the cost analysis of Plan A. With ROW costs approaching \$10 per square foot, the cooperative would be required to spend a considerable amount of money to obtain ROW for new feeders from the existing substations. These costs can be seen in the chart on page 19.

The following pages summarize the projected Service Area demand and distribution losses for each Plan level and Service Area.

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PLAN A

Feed from Existing Custer and Lebanon Substations

Existing/New	2006	2007	2008	2009	2010	2011	2012
Substation of Metering Point	KW	KW	KW	KW	KW	KW	KW
CUSTER A	49422	43904	36449	42693	46108	49797	38780
CUSTER B	39621	49583	47941	49735	41213	44510	48070
CÚSTÉR C	30924	49836	43269	47956	39292	42435	45829
CUSTER D	0	0	37995	41694.	45029	48631	37521
CUSTER E	0	0	0	0	33000	43640	47131
CUSTER F	0	0	0	. 0	0	0	38000
LEBANON A	21432	27742	34516	37967	41004	44284	47826
LEBANON B	38830	42713	46984	29841	32228	34806	37590
LEBANON C	28161	30977	34075	37482	40481	43719	47216
LEBANON D	0	0	0	25841	31908	38460	45537

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Craig Ranch Substation - Policy 301 Study

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Cost by Year

Craig Ranch Substation Policy 301 Study PLAN A - Existing Distribution (Custer, Lebanon) In 2006 Dollars

					In 2006	Dollars	Inflatior	Included
	Compound Inflation	Ŧ			_			
Year	@4.0%/yr	· Service Area	Project	Units	COSERV	BEC	COSERV	BEC
2006	1 000	Custer	Add Feeder Bay in Substation	1 00	\$0	\$75,000	\$0	\$75,000
	1 000	Custer	New 477 Feeder	3.62	\$398,200	80	\$398,200	U\$
	1 000	Custer	Additional ROW Costs on Feeder	3.62	\$2,625,220	\$0	\$2,625,220	\$0
	1.000	Custer	Convert 4/0 to 477	1.70	\$187,000	\$0	\$187,000	\$0
				2006 Totals	\$3,210,420	\$75,000	\$3,210,420	\$75,000
2007	1.040	Custer	Convert 4/0 to 477	· 1.84	\$202,400	\$0	\$210,496	\$0 [°]
	•			2007 Totals	\$202,400	\$0	\$210,496	\$0
			•					
2008	1.082	Custer .	Convert 1/0 to 477	0.57	\$62,700	\$0	\$67,841	\$0
	1.082	Custer	New Transformer	、 1.00	0\$	\$1,400,000	\$0	\$1,514,800
	1.082	Custer	2 New Feeder Bays	2.00	\$0	\$150,000	\$0	\$162.300
	1.082	Custer	New 1000 MCM URD Feeder	、1.10	\$660,000	\$0	\$714,120	\$0 \$
	1 082	Custer	New 477 Feeder Ext.	1 74	\$191,400	\$0	\$207.095	\$0 \$
	1.082	Custer	Additional ROW Costs on Extention	2.84	\$2,008,510	, ,	\$2,173,208	\$0
	,			2008 Totals	\$2,922,610	\$1,550,000	\$3, 162, 264	\$1,677,100
				•	3			
2009	1.125	Custer	Convert 4/0 to 477	1.57	\$172,700	\$0	\$194,336	\$0
	1.125	Custer	2 New Feeder Bays	2.00	\$0	\$150,000	0\$	\$168.750
	1 175	Custor	New 1000 MCM URD					
	140	Custer	reeder	0.22	\$132,000	\$0	\$148,500	\$0
	1 125	Custer -	New 477 Feeder Extension	2 50	\$275,000	\$0	\$309,375	\$0
	1 125	Custer	Additional ROW Costs on Extensions	2.72	\$1,970,500	, ,	\$2.216.813	C S
	1 125	· Custer	Convert 500 MCM to 1000 MCM (URD)	2.10	\$1.260.000	C.S.	\$1 417 500	

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Craig Ranch Substation - Policy 301 Study

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	1.125	Custer	Convert 1/0 to 477	2 30	\$253,000	\$0	\$284,625	ن ک
			Cost	by Year (con	t.)			
			Craig Ranch Su PLAN A - Existing I	ubstation Policy Distribution (Cu	y 301 Study ister, Lebano	(u		
					In 2006 I	Dollars	Inflation	Included
	Compound Inflation							
Year	@4.0%/yr	Service Area	Project	Units	COSERV	BEC	COSERV	BEC
	1:125	Lebanon	New Transformer	1.00	\$0	\$1,400,000	\$0	\$1,575,000
	1.125	Lebanon	Add 2 New Bays	2 00	\$0	\$150,000	\$0	\$168,750
	1.125	Lebanon	Additional ROW Costs on URD Feeder	2.50	\$2,085,600		\$2,346,300	Q\$
	1.125	Lebanon	New URD 1000 MCM Feeder	2.50	\$1,500,000	\$0	\$1,687,500	\$0
				2009 Totals	\$7,648,800	\$1,700,000	\$8,604,948	\$1,912,500
								ł
2010	1 170	Custer	New Transformer	1.00	\$0	\$1,400,000	\$0	\$1,638,408
	1.170	Custer	Add 2 New Bays	2.00	\$0	\$150,000	\$0	\$175,500
	1.170	Custer	Additional ROW Costs on Extension	2.50	\$2,640,000	\$0	\$3,088,800	\$0
	1.170	Custer	New URD Feeder	2.50	\$1,500,000	\$0	\$1,755,000	\$0
	1.170	Custer	Convert 4/0 to 477	2 52	\$277,200	\$0	\$324,324	\$0
				2010 Totals	\$4,417,200	\$1,550,000	\$5,168,124	\$1, 813, 908
	_							
2011	1.217	Custer	2 New Feeder Bays.	2 00	\$0	\$150,000	\$0	\$182,550
	1.217	Custer	New 477 Feeder Extensions (Double Circuit)	2.25	\$335,250	\$0	\$407,999	\$0
	1.217	Custer	Additional ROW Costs on Extension	2.25	\$1,821,600	\$0	\$2,216,887	\$0
				2011 Ťotals	\$2, 156, 850	\$150,000	\$2,624,886	\$182,550
2012	1.265	Custer	New Transformer	1.00	Ş	\$1,400,000	\$0	\$1,771,000
	1 265	Custer	2 New Feeder Bays	2.00	\$0	\$150,000	\$0	\$189,750.
	1 265	Custer	Additional ROW Costs on Extension	4.00	\$2,745,600	\$0	\$3,473,184	0\$
	1.265	Custer	New URD Feeder	2.50	\$1,500,000	\$0	\$1,897,500	\$0
	1.265	Custer	New 477 Feeder	1.50	\$165,000	\$0	\$208,725	\$0

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New 477 Feeder •

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Cost by Year (cont.)

Craig Ranch Substation Policy 301 Study PLAN A - Existing Distribution (Custer, Lebanon)

In 2006 Dollars Inflation Included

ų ,	Compound Inflation		Droiect	IInits	COSERV	BEC	COSERV	BEC
Year	(04.0%)YF	Jervice Area	2 New Feeder Bavs	2.00	\$0	\$150,000	\$0	\$189,750
2012	1 265		Additional ROW Costs on 477 Extension	3 50	\$2,587,200	\$0	\$3,272,808	\$0
			New 477 Feeder (Double	3 50	\$521,500	\$0	\$659,698	\$0
	607.1	LEUAIIUI	(mon)	2012 Totals	\$7,519,300	\$1,700,000	\$9,511,915	\$2,150,500
Plan A					\$28,077,580	\$6,725,000	\$32,493,053	\$7,811,558
I OLAIS				~				
		-		-	Total	\$34,802,580	Total	\$40,304,611

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	4.00% 8.00%	(ear	006	007	008	600	010	011	012	
		Present Worth of Annual Charges	\$1,188,027 2	\$849,003 2	\$1,401,600 2	\$2,008,256 2	\$1,505,436 2	\$1,063,696 2	\$1,605,997 2	\$9,622,014
		Present Worth Factor	1.00000000	0.92592593	0.85733882	0.79383224	0.73502985	0.6805832	0.63016963	
	ate of Inflation iterest Rate	Total Annual Cost	\$1,188,027	\$916,924	\$1,634,826	\$2,529,824	\$2,048,129	\$1,562,918	\$2,548,515	\$12,429,162
OMPARISON - 01 Study sr, Lebanon)-	Average R Average In	Annual Fixed Charges	\$493,143	\$30,360	\$677,712	\$1,409,800	\$901,900	\$346,688	\$1,390,375	\$5,249,977
k ECONOMIC CC ostation Policy 3(istribution (Custe	2%	Total Cost of Annual Improvements to Date	\$3,285,420	\$202,400	\$4,472,610	\$9,348,800	\$5,967,200	\$2,306,850	\$9,219,300	\$34,802,580
'STEM COST FOF Craig Ranch Sul LAN A - Existing D	15.00 [°] 15.44 [°] 183.2	Annual Transmission & Substation Improvements	\$75,000	\$0	\$1,550,000	\$1,700,000	\$1,550,000	\$150,000	\$1,700,000	\$6,725,000
SY SY		Annual Distribution Improvements	\$3,210,420	\$202,400	\$2,922,610	\$7,648,800	\$4,417,200	\$2,156,850	\$7,519,300	\$28,077,580
	Charge Rate arge Rate Losses	Cost of Distribution Losses	\$694,884	\$886,564	\$957,115	\$1,120,024	\$1,146,229	\$1,216,230	\$1,158,140	\$7,179,185
	RV Avg. Fixed Avg. Fixed Ch ge Cost of kW I	Distribution Losses kW	3792	4838	523.	6112	6255	6637	6320	, ,
	COSE BEPC Avera	Year	2006	2007	2008	2009	2010	2011	2012	TOTAL

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Note that green lines indicate new facilities required for Plan A.



IV. Plan B - Construct Sloan Creek Substation in 2009

Load levels in the study area approach transformer capacity at Lebanon Substation beginning in 2009. A new Sloan Creek substation, north of Highway 121 on Sloan Creek road, should be constructed to relieve the overloaded transformers on or before 2009. This station will be constructed under an existing 138 kV transmission line operated by TXU. The new substation will allow CoServ to serve the study area where large residential and commercial growth is currently being constructed or planned along the major SH121 corridor that is also currently under construction.

Again, as with Plan A, right-of-way costs play a vital role in the cost. With ROW costs approaching \$14-18 per square foot, the cooperative would be required to spend a considerable amount of money to obtain ROW for new feeder exits for the new substation and existing substations. These costs can be seen in the chart on page 26.

The following pages summarize the projected Service Area demand and distribution losses for each year and Service Area.

PLAN B

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Construct Sloan Creek (Under Existing Transmission)

Existing/New	2006 ÷	2007	. 2008	2009	2010	2011	2012
Substation or Metering Point	ξ	KW ·	KW	KW	KW	KW	KW
×			p				
CUSTER A	49422	43904	· 36449	.38293	41356	44665	48238
CUSTER B	39621	49583	47941	40404	43636	47127	48397
CUSTER C	30924 .	49836	43269	39316	42461	45858	49527
CUSTER D	0	. 0	37995	37294	40278	43500	49480
LEBANON A	21432 -	27742	34516	37967	-, 41004	44285	47827
LEBANON B	38830	42713	46984	38351	41419	44733	48311
LEBANON C	28161	. 30977	34075	37482	40481	43719	47217
SLOAN CREEK A	0	0	0	41302	· 28557	38842	45949
SLOAN CREEK B	0	0	0	0	28049	34293	45036
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Cost by Year Craig Ranch Substation Policy 301 Study PLAN B - New Sloan Creek Substation (Existing Transmission Line) In 2006 Dollars

					In 2006 D	ollars	Inflation	Included
Year	Compound Inflation @4.0%/yr	Service Area	Project	Units	COSERV	BEC	COSERV	BEC
2006	1.000	Custer	Add Feeder Bay in Substation	1 00	\$0	\$75,000	\$0	\$75,000
	1.000	Custer	New 477 Feeder	3.62	\$398,200	\$0	\$398,200	\$0
	1.000	Custer	Additional ROW Costs on Feeder	3.62	\$2,625,220	\$0	\$2,625,220	\$0
	1.000	Custer	Convert 4/0 to 477	i 70	\$187,000	\$0	\$187,000	\$0
				2006 Totals	\$3,210,420	\$75,000	\$3,210,420	\$75,000
2007	1.040	Custer	Convert 4/0 to 477	1-84	\$202,400	\$0	\$210,496	\$0
				2007 Totals	\$202,400	\$0	\$210,496	\$0
								ţ
2008	1.082	Custer	Convert 1/0 to 477	0.57	\$62,700	\$0	\$67,841	\$0
	1.082	Custer	New Transformer	1.00	\$0	\$1,400,000	\$0	\$1,514,800
	1.082	Custer	2 New Feeder Bays	2.00	\$0	\$150,000	\$0	\$162,300
	1.082	Custer	New 1000 MCM URD Feeder	1.10	\$660,000	\$0	\$714,120	\$0
	1 082	Custer	New 477 Feeder Ext.	1.74	\$191,400	\$0	\$207,095	\$0
	1.082	Ċuster	Additional ROW Costs on Extention	2 84	\$2,008,510	\$0	\$2,173,208	0\$
			1	2008 Totals	\$2,922,610	\$1,550,000	\$3, 162, 264	\$1,677,100
	, ,							
2009	1.125	Sloan Creek	New Substation (Construction, Dual Transformer)	. 100	\$0	\$2,400,000	\$0	\$2,700,000
	1 125	Sloan Creek	New Substation (Land Costs)	5 00	\$0	\$3,920,400	\$0	\$4,410,450
	1.125	Sloan Creek	New Feeders	4 00	\$1,723,500	· \$0	\$1,938,938	\$0
	1.125	Sloan Creek	Additional ROW Costs on Extension	4.00	\$4,171,200	0\$	\$4,692,600	\$0
	1.125	Sloan Creek	Convert 500 MCM to 1000 MCM	0 50	\$300,000	\$0	\$337,500	\$0
				2009 Totals	\$6, 194, 700	\$6,320,400	\$6,969,038	\$7,110,450

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Cost by Year

Craig Ranch Substation Policy 301 Study

PLAN B - New Sloan Creek Substation (Existing Transmission Line)

												_		 			_	 			
Included		BEC	\$175,500	\$0	\$0	\$1,638,000	\$175,500	\$0	\$0	\$1,989,000	1	\$0	\$0	\$0	\$0	\$0	\$0		\$10,851,550		\$37,988,934
Inflation		COSERV	\$0	\$435,825	\$3,088,800	\$0	\$0	\$610,155	\$4,015,440	\$8,150,220		\$0	\$0	\$139,150	\$753,940	\$4,541,856	\$5,434,946		\$27, 137, 384		Total
Dollars		BEC	\$150,000	\$0	\$0	\$1,400,000	\$150,000	\$0	\$0	\$1,700,000		\$0	\$0	\$0	\$0	\$0	\$0		\$9,645,400	~	\$33,437,930
In 2006 [*	COSERV	\$0	\$372,500	\$2,640,000	\$0	\$0	\$521,500	\$3,432,000	\$6,966,000		\$0	\$0	\$110,000	\$596,000	\$3,590,400	\$4,296,400		\$23,792,530		Total
		Units	2.00	2.50	2 50	1.00	2.00	3.50	3.50	2010 Totals		0.00	2011 Totals	1.00	4.00	4.00	2012 Totals				
		Project	2 New Feeder Bays	New 477 Feeders	Additional ROW Costs on Ext.	New Transformer	2 New Feeder Bays	New Feeders	Additional ROW Costs on Ext.			No Projects		Convert 4/0 to 477	New 477 Feeders	Additional ROW Costs on Ext.					
	Service	Area	Lebanon	Lebanon	Lebanon	Sloan Creek	Sloan Creek	Sloan Creek	Sloan Creek					Custer	Sloan Creek	Sloan Creek					
	Compound Inflation	@4.0%/yr	1 170	1.170	1 170	1.170	1.170	1 170	1.170			1.217		1.265	1.265	1.265				f	
		Year	2010						-			2011		2012				 Plan B	Totals		

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Craig Ranch Substation - Policy 301 Study

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DR ECONOMIC COMPARISON	substation Policy 301 Study	Substation (Existing Transmission Line)	Average Rate of	Inflation	Average Interest Rate
SYSTEM COST FO	Craig Ranch S	PLAN B - New Sloan Creek		15.00%	15.44%

4.00% 8.00%

RV Avg. Fixed Charge Rate	Avg. Fixed Charge Rate	e Cost of kW Losses
COSERV AV	3EPC Avg. I	Average Cos

COSERV	Ava. Fixed Cl	harge Rate	ţ	15.00%	llul	ation				4.00%
BEPC AV	g. Fixed Char	ge Rate		15.44%	Ave	erage Interest	Rate ⁻			8.00%
Average (Cost of kW Lo	SSes		183.2 Š						
					7		•	٩		_
		Cost of	Annual	Annual Transmission &	Total Cost of Annual	Annual			Present Worth of	
	Distribution	Distribution	Distribution	Substation	Improvements	Fixed	Total Annual	Present	Annual	•
Year	Losses kW	Losses	Improvements	Improvements	to Date	Charges	. Cost	Worth Factor	Charges	Year
			1							
2006	3792	\$694,884	\$3,210,420	\$75,000	\$3,285,420	\$493,143	\$1,188,027	1.0000000	\$1,188,027	2006
2007	4838	\$886,564	\$202,400	\$0	\$202,400	\$30,360	\$916,924	0.92592593	\$849,003	2007
2008	5223	\$957,115	\$2,922,610	\$1,550,000	\$4,472,610	\$677,712	\$1,634,826	0.85733882	\$1,401,600	2008
2009	5124	\$938,973	\$6,194,700	\$6,320,400	\$12,515,100	\$1,905,075	\$2,844,048	0.79383224	\$2,257,697	2009
2010	5218	\$956,199	\$6,966,000	\$1,700,000	\$8,666,000	\$1,307,380	\$2,263,579	0.73502985	\$1,663,798	2010
2011	5822	\$1,066,882	\$0	\$0	\$0	\$0	\$1,066,882	0.6805832	\$726,102	2011
2012	5719	\$1,048,007	\$4,296,400	\$0	\$4,296,400	\$644,460	\$1,692,467	0.63016963	\$1,066,541	2012
TOTAL		\$6,548,622	\$23,792,530	\$9,645,400	\$33,437,930	\$5,058,129	\$11,606,751		\$9,152,768	

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V. <u>Plan C – Construct New Transmission and Craig Ranch</u> Substation in 2009

The goal of Plan C is to serve the SH121 area at the preferred substation site near Lake Forrest along SH121. This plan would require approximately 2.5 miles of new transmission construction and the new Craig Ranch substation. In addition, Custer Substation will be upgraded and distribution improvements will be implemented as required.

In this case, right of way costs around the Craig Ranch area are able to be acquired at around \$3 per square foot, making this plan more cost effective than the other plans evaluated. These costs can be seen in the chart on page 25. The following pages summarize the projected Service Area demand and distribution losses for each year and Service Area.

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Construct Craig Ranch (New Transmission Construction)

		N					
Existing/New	-2006	2007	2008	2009	2010	2011	2012
Substation or					,		
Metering Point	KW	KW	KW	KW	ΚW	KW	KW
				. ,		¥,	
			4			-	
CUSTER A	49422	43904	36449	38293	41356	44665	48238
CUSTER B	39621	49583	47941	40404	43636	47127	48397
CUSTER C	30924	49836	43269	39316	42461	45858	49527
CUSTER D	0	0 .	37995	37294	40278	43500	49480
LEBANON A	21432	27742	34516	37967	41004	44285	47827
LEBANON B	38830	42713	46984	38351	41419	44733	48311
LEBANON C' .	28161	30977	34075	37482	40481	43719	47217
CRAIG RANCH A	0	0	· 0	41302 -	28557	38842	45949
CRAIG RANCH B	0	0	0.	0	28049	34293	45036

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Cost by Year Craig Ranch Substation Policy 301 Study PLAN C - New Craig Ranch Substation (New Transmission Line)

					In 2006 [Dollars	Inflation	Included
Year	Compound Inflation @4.0%/vr	Service Area	Project	Units	COSERV	BEC	COSERV	BFC
			ŀ					
2006	1.000	Custer	Add Feeder Bay in Substation	1.00	\$0	\$75,000	\$0	\$75,000
	1 000	Custer	New 477 Feeder	3.62	\$398,200	\$0	\$398,200	\$0
	1 000	Custer	Additional ROW Costs on Feeder	3.62	\$2,625,220	\$0	\$2,625,220	0\$
	1.000	Custer	Convert 4/0 to 477	1 70	\$187,000	\$0	\$187,000	\$0
				2006 Totals	\$3,210,420	\$75,000	\$3,210,420	\$75,000
2007	1 040	Custer	Convert 4/0 to 477	184	\$202,400	\$0	\$210,496	\$0
				2007 Totals	\$202,400	\$0	\$210,496	\$0
		_					 	
2008	1.082	Custer	Convert 1/0 to 477	0 57	\$62,700	\$0	\$67,841	\$0
	1.082	Custer	New Transformer	1.00	\$0	\$1,400,000	\$0	\$1,514,800
	1.082	Custer	2 New Feeder Bays	2.00	0\$	\$150,000	\$0	\$162.300
	1.082	Custer	Additional ROW Costs on Extention	2 84	\$2,008,510	\$0	\$2,173,208	\$0
	1.082	Custer	New 1000 MCM URD Feeder	1.10	\$660,000	\$0	\$714,120	\$0
	1.082	Custer	New 477 Feeder Ext	1.74	\$191,400	0\$	\$207,095	\$0
				2008 Totals	\$2,922,610	\$1,550,000	\$3, 162, 264	\$1,677,100
2009	1.125	Craig Ranch	New Substation (Construction)	1 00	\$0	\$2,400,000	\$0	\$2,700,000
	1.125	Craig Ranch	New Substation (Land Costs)	5.00	\$0	\$653,400	\$0	\$735,075
	1.125	Craig Ranch	New Feeders	1.50	\$900,000	0\$	\$1,012,500	\$0
	1 125	Craig Ranch	Additional ROW Costs on Extension	1.50	\$475,200	0\$	\$534,600	80
	1 125	Craig Ranch	New Transmission Line (Construction)	2.00	\$0	\$1,500,000	\$0	\$1,687,500
	1.125	Craig Ranch	ROW Costs on Transmission	2.00	\$0	\$7,500,000	\$0	\$8,437,500
	1 125	Craig Ranch	Convert 500 MCM to 1000 MCM	0.50	\$300,000	\$0	\$337,500	\$0
				2009 Totals	\$1,675,200	\$12,053,400	\$1,884,600	\$13,560,075

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Cost by Year

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Craig Ranch Substation Policy 301 Study

PLAN C - New Craig Ranch Substation (New Transmission Line)

			• • • • •		In 2006 [Dollars	Inflation	Included
	Compound Inflation	Service	•				c	
Year	@4.0%/yr	Area	Project	Units	COSERV	BEC	COSERV	BEC
2010	1.170	Lebanon	2 New Feeder Bays	2.00	\$0	\$150,000	\$0	\$175,500
	1 170	Lebanon	New 477 Feeders	2 50	\$372,500	\$0	\$435,825	\$0
	-1.170	Lebanon	Additional ROW Costs on Ext.	2.50	\$2,640,000	\$0	\$3,088,800	\$0
	1.170	Craig Ranch	New Transformer	1.00	\$0	\$1,400,000	\$0	\$1,638,000
	1.170	Craig Ranch	2 New Feeder Bays	2.00	\$0	\$150,000	\$0	\$175,500
	1.170	Craig Ranch	New Feeders	1.50	\$223,500	\$0	\$261,495	\$0
	1.170	Craig Ranch	Additional ROW Costs on Ext.	1.50	\$475,200	\$0	\$555,984	\$0
				2010 Totals	\$3,711,200	\$1,700,000	\$4, 342, 104	\$1,989,000
								3
2011	1.217		No Projects	000	\$0	\$0	\$0	\$0
				2011 Totals	\$0	\$0	\$0	\$0
•					•			
2012	1 265	Custer	Convert 4/0 to 477	1.00	\$110,000	\$0	\$139,150	\$0
	1.265	Craig Ranch	New 477 Feeders	2.00	\$298,000	\$0	\$376,970	\$0 \$
	1.265	Craig Ranch	Additional ROW Costs on Ext.	2 00	\$633,600	\$0	\$801,504	\$0
				2012 Totals	\$1,041,600	\$0	\$1,317,624	\$0
			•	-				
Plan C					007 C2 130	#1E 270 100	100 100 100	
1 Oldis					\$12,103,430	\$10,310,400	\$14,121,300	\$11,301,173
					Total ·	\$28,141,830	Total	\$31,428,683

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Craig Ranch Substation - Policy 301 Study

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	4.00% 8.00%	Year	2006 2007 *	2008	2009 2010	2011	2012	
		Present Worth of Annual Charges	\$1,188,027 \$849,003	\$1,401,600	\$2,421,491 \$1,301,305	\$723,233	\$746,754	\$8,631,414
		Present Worth Factor	1.00000000 0.92592593	0.85733882	0.79383224 0.73502985	0.6805832	0.63016963	
N ion Line)	° .	Total Annual Cost	\$1,188,027 \$916.924	\$1,634,826	\$3,050,382 \$1,770,411	\$1,062,667	\$1,185,006	\$10,808,241
SYSTEM COST FOR ECONOMIC COMPARISON Craig Ranch Substation Policy 301 Study PLAN C - New Craig Ranch Substation (New Transmissi Avg. Fixed Charge Rate 3. Fixed Charge Rate cost of kW Losses Craig Ranch Substation (New Transmissi Average Rate of 15.00% 183.25 Average Interest F	Annual Fixed Charges	\$493,143 \$30.360	\$677,712	\$2,112,325 \$819,160	\$0	\$156,240	\$4,288,939	
	Total Cost of Annual Improvements to Date	\$3,285,420 \$202 400	\$4,472,610	\$13,728,600 \$5,411,200	\$0	\$1,041,600	\$28;141,830	
	15.00% 15.44% · 183.25	Annual Transmission & Substation Improvements	\$75,000 \$0	\$1,550,000	\$12,053,400 \$1,700,000	0\$	\$0	\$15,378,400
		Annual Distribution Improvements	\$3,210,420 \$202 400	\$2,922,610	\$1,675,200 \$3,711,200	\$0	\$1,041,600	\$12,763,430
	narge Rate je Rate sses	Cost of Distribution Losses	\$694,884 \$886 564	\$957,115	\$938,057 \$951,251	\$1,062,667	\$1,028,766	\$6,519,302
	Avg. Fixed Ch g. Fixed Charg Cost of kW Los	Distribution Losses kW	3792 4838	5223	5119 5191	5799	5614	
	COSERV BEPC Avi Average (, Year	2006, 2007,	2008	2009 2010	2011	2012	TOTAL

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Note that green lines indicate new facilities required for Plan C.



Exhibit BA-10

PUC Docket No. 32476 CCN Application

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APPLICATION FOR A

CERTIFICATE OF CONVENIENCE AND NECESSITY

FOR A PROPOSED TRANSMISSION LINE

DOCKET NO. <u>34276</u>

Submit seven (7) copies of the application and all attachments to:

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

For A Proposed Transmission Line

1. Applicant (Utility) Name:

Brazos Electric Power Cooperative, Inc. (Brazos Electric) Certificate Number: 30016 Street Address: 2404-2412 LaSalle Avenue, Waco, Texas 76706 Mailing Address: P.O. Box 2585, Waco, Texas 76702-2585

2. Person to Contact:

David E. McDaniel Title/Position: Mgr. – Transmission Project Services Phone Number: 254-750-6324 Mailing Address: P.O. Box 2585, Waco, Texas 76702-2585 Email Address: dmcdaniel@brazoselectric.com

Alternate Contact:

Richard Chambers Title/Position: Project Regulatory Coordinator Phone Number: 254-750-6369 Mailing Address: P.O. Box 2585, Waco, Texas 76702-2585 Email Address: rchambers@brazoselectric.com

Legal Counsel:

Jim McDermitt Phone Number: 254-756-7733 Mailing Address: 501 Franklin, Suite 900, Waco, Texas 76701 Email Address: jim.mcd@sbcglobal.net

3. **Project Description:**

Name or Designation of Project: Craig Ranch Transmission and Substation Line Project

Design Voltage Rating (kV): 138 kV

Operating Voltage Rating (kV): 138 kV

Normal Peak Operating Current Rating (A): 1490

4. Conductor and Structures:

Conductor Size and Type: 1033 ACSR

Type of Structures: Single Pole Concrete and/or Steel - Double Circuit

Height of Typical Structures: 100-125 Feet

Explain why these structures were selected; include such factors as landowner preference, engineering

considerations, and costs comparisons to alternate structures that were considered.

These structures require a seventy foot right-of-way (70'), (35' each side of the centerline) instead of a one hundred foot (100'), (50' each side of the centerline), which an H-frame configuration would require. Landowners in general prefer the single pole to the H-frame structure. In addition, the single pole concrete and/or steel structures require less maintenance.

For A Proposed Transmission Line

Provide dimensional drawings of the typical structures to be used in the project.

Please refer to drawings in Figure 1 included with this CCN application.

5. Right-of-way:

Miles of Right-of-Way: Approximately 2.0 miles

Miles of Circuit: Approximately 4.0 miles

Width of Right-of-Way: Seventy feet (70')

Percent of Right-of-Way Acquired: Zero percent (0%)

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

The portion of all the proposed transmission line right-of-way is primarily made up of residential and or future residential property with small commercial development property mixed in on roadways and street intersections. Most of the residential developments are single residences in close proximity to the proposed right-of-way. The central and middle sections of the proposed transmission line right-of-way are comprised primarily of large cultivated tracts with plans to be developed.

6. Substations or Switching Stations:

List the name of all existing substations or switching stations that will be associated with the proposed new transmission line.

TXU's North Allen and McKinney Substations

List the name of all new substations or switching stations that will be associated with the proposed new transmission line.

Craig Ranch Substation (138/25 kV (4) 50 MVA)

7. Estimated Schedule:

Estimated Date of:	<u>Start</u>	<u>Completion</u>
Right-of-way Acquisition	02/01/09	07/15/09
Construction of Facilities	08/01/09	01/17/10
Energize Facilities		01/20/10

3.

For A Proposed Transmission Line

8. Counties:

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List all counties in which preferred or alternate routes are proposed to be constructed.

The proposed project will be sited in Collin County.

9. Municipalities:

List all municipalities in which preferred or alternate routes are proposed to be constructed.

None of the proposed routes will be constructed within a municipality.

Attach a copy of the franchise, permit or other evidence of the city's consent held by the utility. 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.

Not applicable.

10. Affected Utilities:

Identify any other electric utility served by or connected to facilities proposed in this application. Include any utilities sharing proposed facilities (double circuit structures, substation equipment) or right-of-way.

Coserv Electric (Coserv), TXU Electric Delivery, and Grayson-Collin Electric Cooperative (Grayson-Collin)

Describe how any other electric utility will be affected and the extent of the other utilities' involvement in the construction of this project.

Brazos Electric is the wholesale power provider to its member cooperative, CoServ. Construction of the proposed transmission facilities will provide greater and more reliable service to CoServ's growing area.

Neither CoServ, TXU Delivery nor Grayson-Collin will be involved in the construction activities of this project.

11. Financing:

Describe the method of financing this project. If the applicant is to be reimbursed for this project, or a portion of this project, identify the source and the amount of the contribution in aid of construction.

The construction of the proposed facilities will be financed through loan funds of the USDA Rural Development Utility Program (RDUP), formerly the Rural Utilities Service (RUS).

4.

For A Proposed Transmission Line

12. Estimated Costs:

	Transmission Facilities	Substation Facilities
Right-of-way (Easement and Fees)	7,500,000	653,000
Material and Supplies	760.000	1,850,000
Labor and Transportation (Utility)	*	* •
Labor and Transportation (Contract)	500,000	145,000
Stores	**	**
Engineering and Administration (Utility)	240,000	405,000
Engineering and Administration (Contract)	None	None
Estimated Total Cost	9,000,000	3,053,000
Total Cost	12,053,000	

* Included in Engineering & Administrative Costs

** Included in Materials & Supplies Cost

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Application For A Certificate of Convenience and Necessity For A Proposed Transmission Line

13. Need for the Proposed Project:

Describe the need for the proposed construction. Describe the existing transmission system and conditions addressed by this application. Provide historical load data and load projections for at least five years to justify projects planned to accommodate load growth. State how the proposed facilities will meet the projected demand and provide a written description of the steady state load flow analysis that justifies the project. Provide any documentation of the review and recommendation of a PURA §39.151 organization. Provide any documentation showing the proposed facilities are needed to provide service to a new transmission service customer.

Please see included Attachment No. 1 to this CCN application addressing the need for the proposed project.

14. Alternatives to Proposed Project:

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 proposed project. Explain how the proposed project overcomes the insufficiencies of the other options that were considered.

Please see included Attachment No. 1 to this CCN application addressing the alternatives for the proposed project.

15. Schematic or Diagram:

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

Please refer to diagrams in Figure 2 included with this CCN application.

16. 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 preferred and alternate routes. Provide a copy of the complete routing study conducted by the utility or consultant.

A copy of the complete Routing Study detailing the process of identifying routing constraints, selecting potential line segments, and the selection of the preferred and alternate routes is included as Attachment No. 7 to this CCN application.

6.

For A Proposed Transmission Line

The study area was defined by the need to provide greater and more reliable service to CoServ's growing service area in Collin County. Therefore, the study area encompassed the region that has seen the greatest population increase. In addition to the guidelines that the Public Utility Commission of Texas (PUCT) recommends for the siting of proposed transmission lines, Brazos Electric consulted with CoServ and carried out site visits of the study area, reviewed aerial photographs and a topographic map.

The specific factors considered in selecting routes for this project are outlined in PURA §37.056 and PUC Substantive Rule §25.101, as well as Brazos Electric's standard routing factors, including:

Rule §25.101(b)(3)(B)(i)-(iv) Factors

- 1. Routes utilizing existing, compatible rights-of-way, including the use of vacant positions on existing multiple-circuit transmission lines;
- 2. Routes parallel to existing compatible rights-of-way;
- 3. Routes parallel to property lines or other natural or cultural features; and
- 4. Routes conforming with the policy of prudent avoidance.

Brazos Electric's Routing Factors

- 1. Minimum adverse environmental impacts;
- 2. Minimum adverse impact on potential growth areas;
- 3. Maximum utilization of property lines, roadways, and fence lines;
- 4. Maximum utilization of existing ROWs;
- 5. Minimum adverse impacts to rangeland and farmland;
- 6. Minimum adverse impacts to existing residences;
- 7. Acceptance of routing by federal and state agencies; and
- 8. Public meeting and landowner input.

Once the study area was delineated, a comprehensive Routing Study was initiated in order to identify preliminary substation sites and transmission line route alternatives, evaluate preliminary alternatives, and select a substation site and associated transmission line route alternatives within the study area based on engineering, economic, and environmental considerations. The Routing Study considered available project-related information from Brazos Electric and CoServ, local public interests, and the public record, as well as guidance from the PUCT and RDUP on route selection and transmission line design.

Pursuant to negotiations with landowners, correspondence received from local interests, field reconnaissance, and the evaluation of environmental features, Brazos Electric, in collaboration with Horizon Environmental Services, Inc., identified a proposed substation site. Based on the selection of the preferred substation site, a total of 7 preliminary transmission line route alternatives consisting of a total of 18 route segments were identified. These 7 preliminary route alternatives connect the preferred substation site to TXU's existing North Allen to McKinney 138-kV Transmission Line.

As a result of public meeting comments, local interest correspondence, and field reconnaissance, the 7 preliminary route alternatives were narrowed down to the 4 project route alternatives in this CCN application. Potential line segments were adjusted accordingly, with the selection of the preferred route and three alternatives routes, as detailed in Section 6.0 of the Routing Study (Constraints Mapping and Evaluation of Project Alternatives; pages 8 through 24), which has been included as Attachment No. 7 to this CCN application. Brazos Electric's preferred route is Route D (A-I-G). Brazos Electric's 1^{st} alternative is Route A (A-D-E-F). Brazos Electric's 2^{nd} alternative is Route C (A-H-F). Brazos Electric's 3^{rd} alternative is Route G (A-B-C).

17. 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 Procedural Rule §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

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Revised January 1, 2003	7	
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For A Proposed Transmission Line

the responses received. Provide a description of the method of notice, a copy of any notices, and the number of notices that were mailed and/or published.

Brazos Electric posted notice of its intent to construct a proposed 138 kV electrical transmission line in newspapers that generally circulate within Collin County. Public notice was posted in the Dallas Morning News and McKinney Courier - Gazatte. Copies of the notice are included as Attachment No. 3 to this CCN application.

A total of thirty-eight (38) notices were mailed by first class mail to landowners listed on the current county tax rolls that may have land within 300' feet of the centerline of any proposed transmission line routes. One public meeting was held to solicit information from the citizens of Collin County, Texas regarding the proposed electric transmission line. A total of twenty-one (21) people signed in at the meeting held on March 15, 2007. A questionnaire, project map, and self-addressed postage paid envelope were given to each person in attendance with a request that the questionnaire be completed either that evening or at a later date and mailed to Brazos Electric in order that their comments could be evaluated. Copies of the notice, questionnaire, and associated documents are included as Attachment No. 4 to this CCN application. In addition to the public meeting, Brazos Electric mailed project handouts to civic leaders within Collin County. These civic leaders include Judge and Mayors within the project area of the proposed transmission line project.

As of April 30, 2007, Brazos Electric has received a total of eleven (11) questionnaires and/or letters regarding the proposed project, in addition to fielding six phone calls explaining the project and providing additional information. Brazos Electric also received a petition from concerned landowners who live within the Avalon and Horse Shoe Bend Sub-Division. A total of 48 signatures were collected on the petition Copies of the public responses are included in Attachment 4 to this CCN application

Most of the comments received from concerned citizens stated that they did not want the transmission line. Concerns expressed include loss of property values, aesthetics, safety and EMF: Brazos Electric staff addressed these concerns verbally at the public meeting and followed-up with additional information.

18. Routing Maps:

Base maps should be a full scale (one inch = one mile) highway map of the county or counties involved, or a U.S.G.S. 7-minute topographical map, or other map of comparable scale with sufficient cultural and natural features to permit location of the proposed route in the field. Provide a map (or maps) that shows the study area, routing constraints, and all routes or line segments that were considered prior to the selection of the preferred and alternate routes. Identify the preferred and alternate routes and any existing facilities to be interconnected or coordinated with the proposed project. Locate 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 location of the habitable structures, radio transmitters and other electronic installations, airstrips, irrigated pasture or cropland, parks and recreational areas, historical and archeological sites, and any environmentally sensitive areas.

A highway base map identifying all routes that were considered prior to the selection of the preferred and alternative routes has been included as Attachment No. 5 to this CCN application. A USGS topographic map and an aerial photomap identifying the study area, preferred and alternative routes, and routing constraints have been included as Attachment No. 6 to this CCN application.

For A Proposed Transmission Line

19. Permits:

List any permits or approvals required by other governmental agencies for the construction of the proposed project. Indicate whether or not permits have been obtained.

Permits may be required from federal, state, or local authorities, among those are:

- Texas Department of Transportation (TxDOT) for proposed crossings of roadways (State Highway 121). The permits have not been obtained.
 - United States Environmental Protection Agency (EPA) preparation of a Storm Water Pollution Prevention Plan. The permit has not been obtained.

Texas Historical Commission – Cultural Résources Survey. The permit has not been obtained.

Federal Aviation Administration – Height clearance permit. In a letter dated 9 November 2006, the Aviation Division of TxDOT indicated that there are no public use airports within the study area that may meet the criteria of section 77.13 A(2)(ii).

20. Habitable structures:

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 of a transmission project of 230kV or less, or within 500 feet of the centerline of a transmission project greater than 230kV. Provide a general description of each habitable structure and its distance from the centerline of the proposed project. 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 to the closest habitable structure in the group. Locate all listed habitable structures or groups of structures on the routing map.

Presently, there are no habitable structures within 300 feet of the proposed substation location, the centerline of the Preferred Route D, 2^{nd} Alternative Route C, or 3^{rd} Alternative Route G. There is one industrial structure located approximately 146 feet north of the eastern segment of the 1^{st} Alternative Route A (refer to maps included as Attachment No. 6).

21. Electronic Installations:

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

No commercial AM radio transmitters are located within 10,000 feet of the proposed substation site or the centerlines of the alternative transmission line routes. No FM radio transmitters or microwave towers are located within 2,000 feet of the proposed substation site. One microwave tower is located within 2,000 feet

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of the centerline of the Preferred Route D (refer to maps included as Attachment No. 6). No other FM radio transmitters or microwave towers are located within 2,000 feet of the centerlines of the alternative transmission line routes. \rightarrow

22. Airstrips:

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 the proposed project. 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 the proposed project. 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 centerline of the proposed project. 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 private airstrip, registered airport, and registered heliport; and state the distance of each from the centerline of the proposed transmission line. Locate all airstrips, airports, and heliports on a routing map.

In a letter dated 9 November 2006, the Aviation Division of TxDOT indicated that there are no public use airports within the project area that may meet the criteria of section 77.13 A(2)(ii).

One privately owned airport known as Kittyhawk is located south of the study area and is within 10,000 feet of the proposed substation location and the centerline of all four proposed transmission line alternative rights-of-way. Its location is indicated on the Attachment No. 6 map as a white jet enclosed in a blue box.

No heliports are located within 5,000 feet of the proposed substation site or the centerlines of the alternative transmission line routes.

23. Irrigation Systems:

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

No pasture or cropland irrigated by traveling irrigation systems (rolling or pivot type) will be traversed by the proposed project.

24. Notice:

Notice is to be provided in accordance with Procedural Rule §22.52.

10.

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- 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.
- Provide a copy of the written notice to utilities that are located within five miles of the proposed В. transmission line.
- C. Provide a copy of the written notice to county and municipal authorities.
- D. Provide a copy of the notice that is to be published in newspapers of general circulation in the counties in which the proposed 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.

Response to A:

A copy of the written direct notice to owners of directly affected land and a list of the names and addresses of the owners of directly affected land have been included as Attachment No. 8 to this application.

Response to B:

A list of utilities and a copy of the written notice to utilities that are located within five miles of the proposed transmission line have been included with Attachment No. 8 to this application.

Response to C:

A list of county and municipal authorities and a copy of the written notice to county and municipal authorities have been included with Attachment No. 8 to this application.

Response to D:

A copy of the notice that is to be published in newspapers of general circulation in the counties in which the proposed facilities are to be constructed and a list of those newspapers have been included with Attachment No. 8 to this application. Publisher's affidavits and tear sheets will be provided upon receipt.

25. **Parks and Recreation Areas:**

List all parks and recreational areas owned by a governmental body or an organized group, club, or church located within 1,000 feet of the centerline of the project. Provide a general description of each area and its distance from the centerline. Identify the owner of the park or recreational area (public agency, church or club). List the sources used to identify the parks and recreational areas. Locate the listed sites on a routing map.

Parks and recreational areas are defined by the PUCT as being owned by a governmental body or an organized group, club, or church. Research and reconnaissance surveys identified no park or recreational area's within the area of potential effect. No formally classified lands are located within 2,000 feet of the centerline of the proposed routes.

26. Historical and Archeological Sites:

List all historical and archeological sites known to be within 1,000 feet of the centerline of the proposed project. Include a description of the site and its distance to the centerline of the project. 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.
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No historical or archeological sites are located within 1,000 feet of the proposed substation or the centerline of proposed routes. A cultural resources survey will be prepared and submitted to the Texas Historical Commission by a qualified archeologist prior to the construction of the proposed 138 kV transmission line.

27. Coastal Management Program:

Indicate whether the proposed project is located, either in whole or in part, within the coastal management program boundary as defined in 31 T.A.C. §503.1. If the project is, either in whole or in part, in the coastal management program, indicate whether if any part of the proposed facilities are seaward of the Coastal Facilities Designation Line as defined in 31 T.A.C. §19.2(a)(21). Identify the type(s) of Coastal Natural Resource Area(s) using the designations in 31 T.A.C. §501.3(b) impacted by any part of the proposed facilities.

The proposed Craig Ranch transmission line project is not located in whole or in part of the Coastal Management Program.

28. Environmental Impact:

Provide copies of any environmental impact studies 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 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 insure preservation of the areas or species.

Please refer to copies of the Environmental Report and Routing Study prepared by Horizon Environmental Services, Inc. for Brazos Electric that have been included with this CCN application as Attachment Nos.7 and 9, respectively.

29. Substation Site:

List the factors that were considered in selecting the proposed substation site. Please describe the nature and boundaries of the study area for selecting a substation site. Identify the potential substation sites evaluated in the study area. Identify the proposed substation site, and describe the reasons for its selection over alternative sites.

A description of the study area and the process of identifying the load center, alternative substation sites, and the preferred substation site is detailed in the Routing Study included as Attachment No. 8 to this application.

The main factors initially considered during the selection of potential alternative substation sites included:

- 1. A location within CoServ's projected load center;
- 2. Ample room for routing distribution circuits out of the substation;
- 3. A location adjacent to all-weather roads; and
- 4. A willing seller of an adequate-sized tract at a reasonable price.

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Data review and field reconnaissance efforts were directed toward identifying preliminary alternative substation sites within the projected load center. The 4 alternative substation sites selected are described as follows:

Alternative A:

Alternative Substation Site A is located in the northwest quadrant of the load center in an open field adjacent to the western shoulder of Lake Forest Drive. The alternative substation site is located directly south of a large residential subdivision. No habitable structures are located within the property boundary. Its approximate area is 4 acres.

Alternative B:

Alternative Substation Site B is located west of the intersection of Lake Forest Drive and the northern shoulder of SH 121. The alternative substation site is dominated by open plowed fields and has an approximate area of 3 acres. No habitable structures are located within the property boundary.

Alternative C:

Alternative Substation Site C is located east of the intersection of Lake Forest Drive and the northern shoulder of SH 121. The alternative substation site is dominated by open plowed fields and has an approximate area of 2 acres. No habitable structures are located within the property boundary.

Alternative D:

Alternative Substation Site D is located in the northeast corner of an open plowed field north of SH 121. While a portion of the proposed substation site resides within the 100-year and 500-year floodplain areas associated with Cottonwood Creek, it is well outside of the existing riparian corridor. Its approximate area is 6.2 acres. No habitable structures are located within the property boundary.

The evaluation of alternative substation sites included consideration of 39 different environmental and physical factors potentially associated with each based on available information from the public record, public and agency comments received, and field reconnaissance. This evaluation included inventorying and tabulating the number and/or quantity of potentially sensitive environmental features unique to each alternative (e.g., proximity to habitable structures, historic resources, wetlands, roadways, aviation facilities, etc.).

Pursuant to negotiations with landowners, correspondence received from local interests, field reconnaissance, and the evaluation of environmental features, Brazos Electric, in collaboration with Horizon Environmental Services, Inc., identified a proposed substation site. The basis for eliminating alternative substation sites is discussed below.

In order to minimize potential adverse effects to existing residential communities as well as projected future housing development in the area, Alternative Substation Site A was eliminated.

Alternative Substation Site B fronts SH 121, which is an area of increasingly high demand for commercial developers. A highly competitive commercial entity has recently negotiated the acquisition of the property. As such, Alternative Substation Site B has been eliminated from consideration due to the unavailability of the property.

Alternative Substation Site C is located just east of Lake Forest Drive, directly adjacent to the northern shoulder of SH 121. As previously mentioned, any available real estate located within the lucrative commercial corridor that fronts SH 121 is currently subject to extremely competitive inquiry. With respect to this alternative substation site, limitations associated with the procurement of the property

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by Brazos Electric are linked to the unwillingness of the landowner to sell the property; therefore, it was eliminated from further consideration.

Alternative Substation Site D is proposed as the future location of the Craig Ranch Substation (see Attachment No. 8 [Routing Study], Figure 6.1-2). Considerable cooperation of the landowner with Brazos Electric on behalf of this specific property prompted the initial selection of Alternative Substation Site D as the preferred location for the proposed Craig Ranch Substation. Currently, a portion of the proposed substation site resides within the 100-year and 500-year floodplain areas associated with Cottonwood Creek, which would normally deter construction efforts due to obvious environmental concerns. However, the landowner has agreed to initiate artificial filling within the area in order to physically raise the property out of the 100-year and 500-year floodplains. In doing so, any pressing environmental concerns associated with location of the proposed substation within the Cottonwood Creek floodplain can be confidently dismissed.

<u>AFFIDAVIT</u>

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

The sworn affidavit has been included as Attachment No. 10 to this CCN application