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SOAH DOCKET NO. 473-10-1097
PUC DOCKET NO. 37448

APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE GILLESPIE TO NEWTON 345-KV CREZ TRANSMISSION LINE IN GILLESPIE, LLANO, SAN SABA, BURNET, AND LAMPASAS COUNTIES	§	**BEFORE THE STATE**
	§	
	§	**OFFICE OF ADMINISTRATIVE**
	§	
	§	**HEARINGS**
	§	

REBUTTAL TESTIMONY AND EXHIBIT

OF

SERGIO GARZA, P.E.

ON BEHALF OF

APPLICANT
LCRA TRANSMISSION SERVICES CORPORATION

January 26, 2010

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SOAH DOCKET NO. 473-10-1097
PUC DOCKET NO. 37448
REBUTTAL TESTIMONY AND EXHIBIT OF SERGIO GARZA

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND OCCUPATION.

A. My name is Sergio Garza. I am an electrical engineer employed by the Lower Colorado River Authority (LCRA) as Manager of the System Planning and Protection Department.

Q. ARE YOU THE SAME SERGIO GARZA WHO PROVIDED DIRECT TESTIMONY IN THIS DOCKET (NO. 37448)?

A. Yes, I am.

II. PURPOSE OF REBUTTAL TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my testimony is to address arguments contained in the direct testimony offered by several intervenors who raise issues, express concerns, or question various aspects that impact the effectiveness and performance of the Proposed Project. Specifically, I will address the following:

1) Electric system reliability associated with the Proposed Project's paralleling with existing high voltage transmission lines;
2) Benefits to the immediate area;
3) Appropriateness of the Proposed Project's study area; and,
4) Timing to construct the Proposed Project.

To the extent that other intervenors raised other less focused, but still general, questions about the performance and effectiveness of the LCRA TSC Proposed Project, they are addressed by the following discussion as well.

Q. WILL YOU ADDRESS ISSUES ASSOCIATED WITH THE PURPOSE AND NEED FOR THE PROJECT?

A. No. In Docket No. 35665, *Commission Staff's Petition for Selection of Entities Responsible for Transmission Improvements Necessary to Deliver Renewable Energy From*

Competitive Renewable Energy Zones, Order on Rehearing issued May 15, 2009 at page 60 in Conclusion of Law No. 10, the Commission found that the CREZ transmission projects are exempt from addressing the need criteria in PURA 37.056(c)(1) and (2). However, as stated above, I will address a statement by one of the Intervenors regarding electric system benefits provided by the Proposed Project to the immediate area.

Q. WAS YOUR TESTIMONY AND THE INFORMATION YOU ARE IDENTIFIED AS SPONSORING PREPARED BY YOU OR BY KNOWLEDGEABLE PERSONS UPON WHOSE EXPERTISE, JUDGMENT AND OPINIONS YOU RELY IN PERFORMING YOUR DUTIES?

A. Yes it was.

Q. IS THE INFORMATION CONTAINED IN YOUR TESTIMONY AND THE INFORMATION YOU ARE IDENTIFIED AS SPONSORING TRUE AND CORRECT TO THE BEST OF YOUR KNOWLEDGE AND BELIEF?

A. Yes it is.

III. ELECTRIC SYSTEM RELIABILITY ASSOCIATED WITH PARALLELING TRANSMISSION LINES

Q. DID INTERVENORS PROPERLY APPLY THE CONCERNS LCRA TSC STATED IN DIRECT TESTIMONY AND DISCUSSED AT THE TECHNICAL CONFERENCE REGARDING ELECTRIC SYSTEM RELIABILITY WHEN PARALLELING TRANSMISSION LINES?

A. No. In his direct testimony (adopted by Intervenors Charles R. Anderson[1] and Connie S. Crenwelge[2]), Intervener Karl A. Ransleben concludes[3] that "LCRA TSC's proposed Link C3 is unreasonable." Mr. Ransleben further concludes that "The more reasonable route to the northeast from the Gillespie Station is a route that tracks Links C2 and C7 to the juncture with Link C12, for the same reasons LCRA TSC has proposed to use Links C13, C16, and C22".

[1] Direct Testimony of Charles R. Anderson, page 5, lines 7-13.
[2] Direct Testimony of Connie S. Crenwelge, page 7, lines 10-16.
[3] Direct Testimony of Karl A. Ransleben, page 8, lines 5-12, and page 35 lines 20-24.

Q. PLEASE STATE YOUR UNDERSTANDING OF MR. KARL RANSLEBEN'S CONCLUSIONS REGARDING ELECTRIC SYSTEM RELIABILITY ASSOCIATED WITH TRANSMISSION LINE PARALLELING.

A. Based on the above stated conclusions and supporting statements provided by Mr. Ransleben in his direct testimony (see page 14 lines 5-19, page 18 lines 10-24, page 19 lines 2-14, page 20 lines 14-21, page 21 lines 4-10 and lines 17-22, and page 22 lines 8-12), it appears that he believes that a transmission line route is more reliable if it does not parallel other transmission lines. He believes electric system reliability is far superior when transmission lines are constructed in isolation of other transmission lines. As such, Mr. Ransleben concludes that the more isolated transmission lines are to each other, the more reliable the electric system behaves. With this understanding on electric system reliability, Mr. Ransleben proposes a route for the Proposed Project that is completely free of any paralleling to other existing transmission lines.

Q. DO YOU AGREE WITH MR. RANSLEBEN'S CONCLUSIONS REGARDING ELECTRIC SYSTEM RELIABILITY ASSOCIATED WITH PARALLELING TRANSMISSION LINES?

A. No, I do not agree with Mr. Ransleben's conclusion regarding electric system reliability associated with paralleling transmission lines.

Q. WHY DON'T YOU AGREE WITH MR. RANSLEBEN'S CONCLUSIONS REGARDING ELECTRIC SYSTEM RELIABILITY ASSOCIATED WITH PARALLELING TRANSMISSION LINES?

A. First, Mr. Ransleben misapplied LCRA TSC's concern regarding electric system reliability that is discussed in my direct testimony. In my direct testimony, I state:

> *"the loss of multiple transmission components due to a single event (failure) whose consequences may lead to an unstable power system condition over a large area impacting a very large number of end-use consumers."*

Although Mr. Ransleben correctly understood that outages of multiple transmission lines for the same event result in reliability concerns, he misapplies his understanding to mean *any* and *all* transmission line outages *regardless* of length of paralleling, voltage level,

function, configuration, etc. Further, he ignores the importance of the consequences that result from these multi-circuit outages in assessing overall electric system reliability. For example, there are situations or conditions that exist today where the loss of multiple non-bulk type transmission lines constructed in parallel to each other does not result in the loss of transmission service to electric loads or in an unstable power system.

Second, at the technical Conference held on December 3, 2009, I discussed that paralleling of transmission lines is not uncommon in the industry and that LCRA TSC's transmission system consists of numerous miles of paralleled construction. I explained that multiple transmission lines can be out at the same time yet the decreased reliability might not be of concern because it does not result in an unstable power system condition that impacts a large area or a large number of end-use consumers. An unstable electric system impacting a broad area is a key element of reliability consideration because an unstable system generally results in large areas in the state being without electricity. Further, depending on the complexity of the restoration effort, the time that a broad area is without electric service may be an extended period. Associated with this issue of decreased reliability due to paralleling transmission lines, recently ERCOT communicated its concern to Transmission Service Providers regarding transmission line routes that result in "super-contingency" conditions (see Exhibit SG-1R); however, ERCOT's concerns, similar to LCRA TSC's, focused on multiple 345-kV transmission lines or multiple CREZ transmission lines and not necessarily on lower voltage level transmission lines as is the case with the existing transmission lines in the area being considered by LCRA TSC for paralleling with the Proposed Project.

Lastly, Mr. Ransleben only focuses on paralleling to assess the routing options. He ignores other key factors associated with routing of transmission lines that must be considered to balance the overall performance and effectiveness of the transmission line. These key factors include but are not limited to cost, length, regulatory requirements, and environmental factors as discussed by Mr. Palafox in his direct testimony. Focusing on avoidance of paralleling other transmission lines of any voltage level and configuration as a sole measure to evaluate transmission line routes is not prudent route planning.

Q. DO THE TRANSMISSION LINE ROUTE SEGMENTS SUPPORTED BY MR. RANSLEBEN (SEGMENTS C2 AND C7) MEET THE REQUIREMENTS SET FORTH BY THE COMMISSION?

A. Yes, they do. Although Links C2 and C7 are not contained in the preferred route in the set of routes proposed by LCRA TSC in its CCN Application, Mr. Ransleben's proposed route that includes these links can be accommodated by several of the LCRA TSC alternative routes (GN 1, GN 2, or GN 3). Any of the eleven LCRA TSC transmission line routes provides the transmission facilities consistent with the Commission's Order in Docket No. 35665 for the construction of a 345-kV transmission line between the Newton and Gillespie stations.

IV. NON-CREZ ELECTRIC SYSTEM BENEFITS

Q. HAVE INTERVENORS PROPERLY UNDERSTOOD THE TOTAL BENEFITS PROVIDED BY THE PROPOSED PROJECT?

A. No. In her direct testimony (answer to question No. 42 on page 7), Intervener Jan Yates Boultinghouse states that the Proposed Project does not provide any benefits to the immediate area. Specifically, Intervenor Boultinghouse states:

> *"I have seen no evidence from the LCRA that any of this transmitted electricity will be used by our ranch. There is no gain from this line for us or our area."*

She further states (answer to question No. 42 on page 7):

> *"There will be no improvement of service or lower cost to the consumer in this area."*

Q. DO YOU AGREE WITH MRS. BOULTINGHOUSE'S CONCLUSIONS REGARDING THE BENEFITS PROVIDED BY THIS PROJECT TO THE IMMEDIATE AREA?

A. No, I do not agree with Mrs. Boultinghouse's conclusion regarding the immediate area benefits, or lack thereof, provided by the Proposed Project in terms of area gains, improvements of service and costs.

First, Mrs. Boultinghouse does not provide any evidence to support her own conclusion regarding the Proposed Project's impact to the area's electric service. Regarding the evi-

dence required by Mrs. Boultinghouse from LCRA TSC on benefits provided by the Proposed Project, the evidence to justify the project between the Gillespie and Newton stations was established in another docket (Docket No. 33672) and is not an issue to be taken up in this docket. That said, in my direct testimony, I referenced three key CREZ supporting studies associated with Docket No. 33672 which included discussions by ERCOT on the need and benefits to the Hill Country area of Texas that are provided, in part, by the Proposed Project. For example, in a CREZ-supporting study report that I referenced in my direct testimony (page 29 of the Analysis of Transmission Alternatives for Competitive Renewable Energy Zones in Texas, dated December 2006) ERCOT stated,

> *"New 345-kV lines in the Hill Country may be required in the future to alleviate local under-voltage conditions, as well as to serve increasing load in the area."*

Second, Mrs. Boultinghouse failed to acknowledge information provided in my direct testimony regarding electric system benefits to the 16-county area west of Austin. In Section VI of my direct testimony, I discuss the non-CREZ electric system benefits provided by the Proposed Project. Specifically, on pages 21-23, I describe in detail electric system benefits to the 16-county area west of Austin in the Hill Country (including Gillespie County). These benefits are non CREZ-related and would be required eventually even if a CREZ need was non-existent.

Lastly, Mrs. Boultinghouse does not acknowledge what I stated in my direct testimony regarding the Commission's goals for the CREZ project. In my direct testimony, I state:

> *"The Commission's goal throughout the CREZ process was to ensure delivery to customers of the energy generated by renewable resources in the CREZ in a manner that is most beneficial and cost-effective to the customers. Specifically the Commission's CREZ Rule, P.U.C. SUBST. R. § 25.174(c) (2) states:*
>
> > *The commission shall develop a plan to construct transmission capacity necessary to deliver to electric customers, in a manner that is most beneficial and cost-effective to the customers, the electric output from renewable energy technologies in the CREZ."*

Mrs. Boultinghouse, as well as the residents of Gillespie County and the broader Hill Country area are all electric customers within Texas (Electric Reliability Council of Texas region) and therefore are customers that the Commission believes will benefit from

the CREZ projects. Therefore, it is my position that LCRA TSC did indeed provide the supporting evidence discussing the CREZ and non-CREZ benefits, including those in the Hill Country area, associated with the Proposed Project in more ways than one.

V. APPROPRIATENESS OF STUDY AREA

Q. DID ANY OF THE INTERVENORS EXPRESS ISSUES REGARDING THE PROPOSED PROJECT'S STUDY AREA?

A. Yes, on page 12, Section III., item B. titled "Axes to grind with the P.U.C. process", of his direct testimony, Intervenor Robert T. Payne stated:

> *The Gillespie to Newton "Study Area" is clearly biased. Almost all miles of all segments are on the western side of a line drawn directly from Gillespie to Newton."*

Q. IS THE PROPOSED PROJECT'S STUDY AREA APPROPRIATE FROM A SYSTEM PLANNING PERSPECTIVE?

A. Yes it is. The study area used to develop transmission line routes for the Proposed Project is appropriate from a system planning perspective because it both includes and aligns the two Commission-defined end points (Newton and Gillespie stations) associated with the new 345-kV transmission line identified as part of the CREZ Transmission Plan in Docket No. 33672 and Commission-ordered to be constructed in Docket No. 35665.

VI. TIMING OF THE PROPOSED PROJECT

Q. DID ANY OF THE INTERVENORS EXPRESS ISSUES REGARDING THE PROPOSED PROJECT'S CONSTRUCTION TIMING?

A. Yes, on page 12, Section III., item C. titled "Axes to grind with the P.U.C. process", of his direct testimony, Intervenor Robert T. Payne stated:

> *Without a CREZ line in existence from West Texas to either Gillespie or Newton.* [SIC] *This process of first creating a CREZ line from Gillespie to Newton seems backwards. Until CREZ lines from West Texas to either Gillespie or Newton are under construction, proceeding with building this segment appears to be putting the cart before the horse."*

Q. DO YOU AGREE WITH MR. PAYNE'S STATEMENT REGARDING THE TIMING OF THE CONSTRUCTION FOR THE PROPOSED PROJECT?

A. No, I do not agree with Mr. Payne's statement regarding the timing of the Proposed Project. This project should not be delayed.

Q. WHY DON'T YOU AGREE WITH MR. PAYNE'S STATEMENT REGARDING THE TIMING FOR THE PROPOSED PROJECT?

A. First, in its Order on Rehearing on Docket No. 33672 dated October 7, 2008, the Commission identified the Proposed Project as part of the approved CREZ Transmission Plan. Then, in its Order on Rehearing in Docket No. 35665, dated May 15, 2009, the Commission ordered the construction of this project.

Second, the Commission specifically designated the Proposed Project as a "Priority Project" in its Order on Rehearing in Docket No. 33672, dated October 7, 2008. In part, this project was designated a "Priority Project" because, in addition to facilitating the CREZ function, this project is critical in relieving current congestion that is hampering the delivery of existing generation to the ERCOT grid.

Third, the Commission set the CCN Application filing dates for all CREZ-related projects requiring certification. Specifically for the Proposed Project, the Commission filing date was set as October 7, 2009 and later amended to October 28, 2009.

Clearly, the Commission anticipated the certification of a route in this proceeding between the defined end points and subsequently construction of this line to proceed on a parallel path with other transmission projects to avoid Mr. Payne's "cart before the horse" concern. The Commission assigned Oncor Electric Delivery the project to construct a 345-kV transmission line between the Brown and Newton stations. This provides the source from West Texas as discussed by Mr. Payne. This project is in progress (Docket No. 37464) and is scheduled to be completed by December 2012[4]. With these two pro-

[4] Item number 8 in Application of Oncor Electric Delivery Company, LLC to amend its Certificate of Convenience and Necessity for the Brown – Newton 345-KV CREZ Transmission Line in Brown, Mills, Lampasas, McCulloch and San Saba Counties.

jects completed, the improvement in transmission service to the immediate Hill Country area (one of the non-CREZ benefits provided by the Proposed Project) is also initiated as a 345-kV corridor is established from West Texas, through the Oncor Newton Station and into the Gillespie Station.

VII. SUMMARY AND CONCLUSION

Q. PLEASE SUMMARIZE YOUR RESPONSE TO THE ISSUES, CONCERNS, QUESTIONS, AND CONCLUSIONS OFFERED BY INTERVENORS REGARDING THE EFFECTIVENESS AND PERFORMANCE ASSOCIATED WITH THE LCRA TSC PROPOSED PROJECT.

A. Not only is this transmission line a key component of the overall CREZ Transmission Plan as a Priority Project, it is also a component of a transmission path that will provide necessary and reliable transmission infrastructure that will support the Hill Country area existing and load growth needs and it should not be delayed.

In their conclusions and statements, the intervenors ignore benefits that accrue to themselves and to their communities as a result of the Proposed Project. In fact, by their own statements given in direct testimony, many of the Intervenors acknowledge that the Hill Country area will continue to develop. And, part of this development and growth might be in their own land as they discuss their own intentions to develop their lands. This imminent continued growth in the Hill Country area is yet another reason why the Proposed Project needs to be completed as planned and completed as soon as possible before electric system reliability becomes degraded.

Q. AFTER REVIEWING THE DIRECT TESTIMONY PROVIDED BY THE INTERVENORS IN THIS DOCKET, DO YOU STILL BELIEVE THAT LCRA TSC'S PROPOSED PROJECT IS THE MOST COST-EFFECTIVE SOLUTION TO ADDRESS THE OBJECTIVES SET BY THE COMMISSION?

A. Yes, I do. Even more so after reviewing Intervenors' own claims of plans for land development in the immediate area. Should there be any credibility to these land development plans, the growth occurring and presently anticipated for the area will increase and accel-

erate, resulting in even greater non-CREZ related electric system benefits provided by the Proposed Project.

Reiterating what I previously stated in my direct testimony, through its Application, LCRA TSC has demonstrated that its Proposed Project is consistent with the transmission system improvements ordered by the Commission in Docket No. 35665. Further, LCRA TSC has demonstrated that the transmission line routes presented in its CCN Application are reasonable from a system planning perspective and take into consideration the Commission's requirements for cost-effectiveness and ERCOT's concerns on grid reliability. LCRA TSC has followed applicable processes and procedures, including internal, state, and national requirements to determine the best solution in meeting the objectives set forth by the Commission in the CREZ project. Specifically, the LCRA TSC Proposed Project:

1) Addresses one of the transmission projects included in the Final Order of Docket No. 35665 where the Commission directed LCRA TSC to construct projects in the CTP;
2) Is a key component of the CTP that integrates over 18,000 MW of renewable generation into the ERCOT region in the most cost-effective manner;
3) Adds the diversity in transmission corridors determined to be necessary by ERCOT for the CTP to be effective;
4) Includes routing options that are consistent with system performance expectations as indicated by ERCOT in its various studies;
5) Excludes transmission line routing options that are not reliable, add unnecessary cost, and inhibit the effectiveness of the Commission-approved CTP;
6) Provides benefits above and beyond its CREZ-load integration function as follows:
    a. the reliability in the Hill Country area west of Austin is improved,
    b. assists in maximizing the dispatch of existing wind generation located in West Texas, and
    c. provides long-term economic benefits in the ERCOT region.
7) Provides routing options that help maintain and maximize the long-term reliability of the broader transmission system in the broader Central Texas area.

Granting the CCN amendment sought by LCRA TSC in this docket would enhance reliability of transmission service to ensure that renewable generation is integrated to the ERCOT grid in the most cost-effective manner. It also assists in meeting the requirements of loads served in this growing area of Central Texas, including the Gillespie County area, as well as the broader ERCOT region.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

From: Competitive Renewable Energy Zone Transmission service Providers [mailto:CREZ_TSP@LISTS.ERCOT.COM] **On Behalf Of** Lasher, Warren
Sent: Tuesday, January 19, 2010 7:58 AM
To: CREZ_TSP@LISTS.ERCOT.COM
Subject: Multiple Transmission Circuits in Single Corridors

ERCOT submitted the attached letter in response to questions from Public Utility Commission (PUC) Staff regarding the planning implications of routing multiple transmission lines in the same transmission corridor in Docket No. 37464.

ERCOT understands that the CREZ Transmission Owners (TOs) are required to develop an adequate set of routes for review in the PUC's CCN application process. However, in developing your route recommendations, we ask that you take into consideration the fact that the placement of multiple circuits in a single corridor can lead to the development of a super-contingency that may need to be addressed in future planning studies. The loss of an entire transmission corridor is a NERC category D contingency. Furthermore, the use of a single corridor for multiple circuits, especially multiple 345-kV circuits, may impact the maximum transfer capacity and effectiveness of the CREZ Transmission Plan (CTP). The CREZ Transmission Optimization (CTO) Study did not presume that new Category D Contingencies would be created as a result of the routing and construction of the new CREZ circuits, and therefore the potential impact of such a contingency on the CTP is unknown at this time.

In addition, when developing your route recommendations, please also consider that increased circuit lengths may have a negative impact on the effectiveness of the overall CTP, although these impacts have not been quantified at this time.

Let me know if you have any questions or would like to discuss these issues further.

WL

Warren Lasher
Manager, System Assessment
ERCOT
512-248-6379
wlasher@ercot.com

January 5, 2010

Mr. Matt Morais
Mr. Warren Lasher
ERCOT
7620 Metro Center Drive
Austin, Texas 78744

RE: Docket 37464, *Application of Oncor Electric Delivery Company, LLC to Amend Its Certificate of Convenience and Necessity for a Proposed CREZ 345kV Transmission Line in Brown, Mills, Lampasas, McCullough and San Saba Counties.*

Dear Mssrs. Morais and Lasher:

Staff has proposed Route 140 in the above-styled docket. Route 140 begins at the Brown substation and parallels the Oncor-owned Red Creek to Comanche Switch 345kV transmission line for approximately 22 miles. Staff would like ERCOT to respond to the following questions in any format you choose:

Please explain ERCOT's responsibilities relating to the reliability of the ERCOT Region electric grid.

How does ERCOT meet its responsibilities described above?
Please explain how ERCOT relies upon transmission providers to help meet its responsibilities, if at all.

Please explain what factors ERCOT considers when evaluating the reliability of parallel transmission lines, specifically two 345kV transmission lines.

What kind of reliability data (including occurrence of outages) does ERCOT maintain regarding parallel 345 kV transmission lines?

Please describe ERCOT's evaluation of any reliability issues relating to the paralleling of 345kV transmission lines in Route 140, as described above.

Specifically, assuming that Route 140 was selected by the Commission, please explain what would happen if an outage of both transmission lines were to occur at the same time.

Can ERCOT maintain system reliability if Route 140 is selected by the Commission?

We appreciate your assistance in this matter and look forward to your reply.

Sincerely,

Andres Medrano
Margaret Uhlig Pemberton
Attorneys – Legal Division

cc: Lori Cobos

January 7, 2010

Ms. Margaret Uhlig Pemberton
Mr. Andres Medrano
Public Utility Commission of Texas
Legal Division
1701 N. Congress Avenue
P.O. Box 13326
Austin, Texas 78711

Re: PUCT Docket No. 37464, *Application of Oncor Electric Delivery Company, LLC to Amend its Certificate of Convenience and Necessity for the Brown-Newton 345-kV CREZ Transmission Line in Brown, Mills, Lampasas, McCulloch and San Saba Counties.*

Dear Ms. Pemberton and Mr. Medrano:

In response to your January 5, 2010 letter, ERCOT provides the following response to the questions regarding proposed Route 140 in Public Utility Commission of Texas (PUCT) Docket No. 37464:

Please explain ERCOT's responsibilities relating to the reliability of the ERCOT Region electric grid.

Under PUCT Substantive Rule §25.361, ERCOT is designated as an independent organization under the Public Utility Regulatory Act (PURA) §39.151. One of ERCOT's designated responsibilities is to ". . . ensure the reliability and adequacy of the regional electrical network . . .". ERCOT is further required to ". . . maintain the reliability and security of the ERCOT region's electrical network, including the instantaneous balancing of ERCOT generation and load and monitoring the adequacy of resources to meet demand." §25.361 C(4). ERCOT is also registered with the North American Electric Reliability Corporation (NERC) for several reliability functions, including the Reliability Coordinator, Planning Authority, Balancing Authority, and Transmission Operator and in those roles, ERCOT is required to comply with the NERC Reliability Standards.

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How does ERCOT meet its responsibilities described above?

As these responsibilities relate to system planning, ERCOT employs a staff of engineers and other technical specialists who use various computer models to simulate the expected future operational states of the system and to determine its limitations. These individuals work closely with the PUCT, ERCOT transmission providers, and other stakeholders through the established ERCOT stakeholder committee structure to plan the ERCOT electrical system in a reliable manner.

The overarching reliability rules that drive the planning process are the NERC Reliability Standards. These standards require that the system be planned such that it can handle certain levels of stress. Stresses to the system are called "contingencies" under the NERC rules, and there are different planning requirements for the different types of contingencies. For example, a Category B Contingency represents the loss of a single system element – i.e., a single transmission line, a transformer, or a generator. Under these circumstances, the system must be planned so that it can absorb such stress without shedding firm load. Category C and D contingencies are more severe; as an example, the loss of all transmission elements in a common right-of-way (ROW) is a Category D Contingency. For this type of contingency, the NERC reliability criteria allow for some firm load to be tripped off line in order to relieve any overloads or other problems resulting from the Category D Contingency, but do not allow for cascading outages and complete system failure. In essence, it is these requirements that drive ERCOT's actions in maintaining system reliability.

Please explain how ERCOT relies upon transmission providers to help meet its responsibilities, if at all.

As it relates to system planning, ERCOT relies upon transmission providers (as well as other Market Participants) to provide data necessary for the reliable operation and planning of the ERCOT transmission system. The data includes transmission line impedances and ratings, generator reactive and dynamic characteristics, and contingency definitions on their respective systems. Stakeholder committees and ERCOT personnel incorporate this information into model databases that describe the characteristics of the power system, and ERCOT uses these databases to analyze the capabilities of the power system against the NERC Reliability Standards. As described above, if the results of this analysis demonstrate that the ERCOT system violates any relevant NERC requirement, transmission upgrades are developed to resolve the issue. Such upgrades are then constructed solely by the transmission providers in the ERCOT region, subject to PUCT oversight.

The transmission providers are also the NERC-registered Transmission Planners for their portion of the system and are responsible, in that role, for meeting numerous NERC Reliability Standards.

Please explain what factors ERCOT considers when evaluating the reliability of parallel transmission lines, specifically two 345kV transmission lines.

ERCOT does not have direct knowledge of transmission lines that are routed within a single transmission corridor. Only the transmission providers have these system details, and, as described above, they use this information to identify the relevant contingencies on their respective systems and provide those contingencies to ERCOT.

Accordingly, in the case of parallel transmission lines in a single corridor, a transmission provider would identify that set of circuits as a NERC Category D Contingency and would provide that information to ERCOT. ERCOT regularly analyzes the most extreme of the Category D Contingencies to ensure that a Category D Contingency will not result in significant impacts to the transmission system, including loss of the entire system.

As a general matter, Category D Contingencies are the most severe stresses to the system under the NERC Reliability Standards. Without commenting on the specific proposal at issue, ERCOT notes that its opinion of the importance of Category D Contingencies is consistent with the following statements by Oncor in the Rebuttal Testimony of Ken Donohoo in this docket (PUCT Docket No. 37464):

> While I agree that the occurrence of an event that may cause an outage of both the existing Red Creek - Comanche line and the CREZ 345 kV Brown to Newton project ("Proposed Transmission Line Project"), if constructed on parallel links, is not likely, nonetheless this is an important issue that the Commission should consider (page 2, lines 22 – 25); and,
>
> However, when the paralleling includes multiple 345 kV Brown - Newton CCN lines, reliability issues that could arise from paralleling should also be considered as part of the routing and approval process. (page 3 lines 1 -2).

What kind of reliability data (including occurrence of outages) does ERCOT maintain regarding parallel 345kV transmission lines?

ERCOT does not maintain statistics associated with the outages of parallel circuits.

Please describe ERCOT's evaluation of any reliability issues relating to the paralleling of 345kV transmission lines in Route 140, as described above.

ERCOT has not specifically analyzed any reliability issues associated with the paralleling of 345kV transmission lines in Route 140 as developed by Oncor in PUCT Docket No. 37464. As described above, ERCOT is required to analyze NERC Category D Contingencies under the NERC Reliability Standards, which would include parallel lines in a single corridor (as identified by the relevant ERCOT transmission provider). In general, evaluating Category D Contingencies requires both steady-state and transient stability analysis. These evaluations require development of highly detailed model input datasets, complex computer modeling, and analysis of extensive model outputs.

Specifically, assuming Route 140 was selected by the Commission, please explain what would happen if an outage of both transmission lines were to occur at the same time?

This scenario would be a NERC Category D Contingency and ERCOT would model it as such based on the information provided by the relevant ERCOT transmission provider. Based on the system and operational plans developed by ERCOT to address this contingency, in essence, ERCOT would operate the system to ensure that the instantaneous loss of all of these circuits would not result in significant impacts to the transmission system, including loss of the entire system. However, the loss of electrical service to a widespread area could result and would be acceptable under NERC Reliability Standards, as a result of such an event.

Can ERCOT maintain system reliability if Route 140 is selected by the Commission?

Yes. ERCOT will plan and operate the system consistent with all applicable reliability standards.

However, ERCOT notes that despite the fact that system reliability would be maintained, Route 140 could impact the *transmission transfer capacity* of the Competitive Renewable Energy Zone (CREZ) Transmission Plan (CTP). Route 140 and similar routes where multiple 345kV lines are on the same ROW would result in a new Category D Contingency. The CREZ Transmission Optimization (CTO) Study did not presume that new Category D Contingencies would be created as a result of the routing and construction of the new CREZ circuits. Accordingly, because the CTO Study did not consider these types of contingencies, their potential impact is unknown. Category D Contingencies (e.g., Route 140 or similar routes) could have minimal impact on the system or could have sufficient impact to warrant lowering the maximum transfer capability in order to reduce that impact to an acceptable reliability level. Because of the unknown variables involved in understanding the potential impact to system capability, and the complex studies required to estimate such an impact, if any, ERCOT cannot provide a reasonable

quantitative estimate at this time and is merely noting this potential effect as a qualitative consideration.

I hope you find this information helpful to your analysis of proposed Route 140 in this docket.

Sincerely,

Warren Lasher
Manager, System Assessment