

1 **Q. DO YOU BELIEVE THAT SHARYLAND'S COST ESTIMATES**  
2 **ACCURATELY REFLECT THE DIFFERENCES IN COSTS OF THE**  
3 **ROUTES?**

4 A. No, I am very skeptical of some aspects of Sharyland's cost estimates.

5 **Q. WHY ARE YOU SKEPTICAL OF THE ACCURACY OF SHARYLAND'S**  
6 **ESTIMATES.**

7 A. First, the fact that the Preferred Route is 40% longer than the shortest route but is  
8 only 22% more expensive than the least-cost route gives me some concern. Second,  
9 if the estimate in Attachment 3 of the Sharyland application for ROW and land  
10 acquisition for just the transmission line (as opposed to the collection stations) is  
11 divided by its length, it gives basically the same dollar per mile figure for each and  
12 every route. Considering the fact that the proposed line routes go through several  
13 counties and up to 45 miles apart, I think that using the same figure for each will  
14 result in some ROW cost being over or under estimated.

15 **Q. WHAT WEIGHT DO YOU RECOMMEND BE GIVEN TO THE COST**  
16 **ESTIMATES IN SELECTING A ROUTE TO BE CONSTRUCTED BY**  
17 **SHARYLAND IN THIS CASE?**

18 A. Although I have concerns about the precision of Sharyland's estimates, the estimates  
19 are at least accurate enough to show that the Preferred Route is substantially more  
20 expensive than either Route 3 or 5.

21 **V. CONCLUSIONS AND RECOMMENDATIONS**

22 **Q. WHAT ARE YOUR CONCLUSIONS REGARDING THIS APPLICATION.**

1 A. After reviewing the application, EA and Sharyland's RFI responses and based on my  
2 site visit, I conclude that Routes 3 and 5 are far superior to Sharyland's Preferred  
3 Route 1 or any of the other northern routes (Routes 2 and 6).

4 **Q. DO YOU HAVE ANY RECOMMENDATIONS TO MAKE TO THE**  
5 **COMMISSION?**

6 A. Based on my analysis and the relative weight that should be applied to the routing  
7 criteria in this case, I recommend that the Commission order Sharyland to build either  
8 Route 3 or Route 5. I also recommend that the Commission find that Routes 1, 2 and  
9 6 should not be approved based on their significantly longer length and higher cost,  
10 their significant negative impact on environmental, cultural, and historic criteria, and  
11 in acknowledgement of the absence of any routing criteria that would elevate the  
12 proximity to wind generators as worthy of more weight in selecting a line than the  
13 statutory and rule criteria directly applicable to this project. Therefore, the  
14 Commission should only approve a Sharyland route using Route 3 or Route 5.

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EXHIBIT HLH-1QUALIFICATIONS AND PROFESSIONAL EXPERIENCE  
OF  
HAROLD L. HUGHES JR.

Harold L. Hughes Jr. is a Professional Engineer with over 40 years of experience in the energy business. His broad background includes utility regulation and legislation, transmission line design and construction and power plant construction and operations. While with the Public Utility Commission of Texas (PUC), Mr. Hughes served as Manager of the Fuels section, Manager of Engineering, and later as the Director of the Electric Utility Division with responsibility for overseeing all electric utility matters before the PUC. He has served as an expert witness on a broad range of technical topics including Certificate of Convenience and Necessity (CCN) applications, quality of service, fuel audits, depreciation, and system operations. Mr. Hughes has prepared and presented training on numerous utility related topics such as system operations, transmission line routing, and wheeling. As a consultant, he has been an active participant in the industry restructuring in Texas. He has prepared a general plant allocation study and filed testimonies on behalf of municipal clients regarding proposed increases to the Transmission Cost of Service and Price-to-Beat fuel cases. Mr. Hughes was also active in attending Electric Reliability Council of Texas (ERCOT) meetings and representing clients on the Protocols Revision Subcommittee which handles all requests for changes to the current ERCOT Protocols. Mr. Hughes has prepared expert testimony on behalf of landowners impacted by proposed transmission lines. He is also editor-in-chief of a weekly newsletter to clients which summarizes activities at ERCOT and at the PUC.

**EDUCATION**

MBA

Corpus Christi State University, Corpus Christi Texas

BS – Civil Engineering

University of Texas at El Paso, El Paso Texas

**PROFESSIONAL HISTORY**

R. J. Covington Consulting

Consultant

Public Utility Commission of Texas

Director of Electric Division

Saber Refining Company

Staff Engineer

Central Power and Light Company

Transmission Engineer

Brown and Root

Cost Engineer/Estimator

## **REPRESENTATIVE TRANSMISSION EXPERIENCE**

As a Transmission Engineer, designed foundations for structures in problem soils for the Lon C. Hill – STP 345 kV line. Inspected all foundation installations and worked with the contractor to design special foundations and structures to overcome problems in the field, so that the project could stay on schedule.

As a Transmission Engineer, worked as an internal consultant to design foundations and structures for lines in problem areas, such as across Nueces Bay and adjacent to Padre Island.

Designed and conducted full scale tests for the first concrete transmission poles used by Central Power and Light. Developed special installation technique with contractor to install poles using air and water jets. Testing and installation techniques led to acceptance by the company for use in coastal areas and their use on Padre Island, Texas.

As a Transmission Engineer, designed numerous 69kV and 138kV lines in Texas. Duties included line design, routing, ordering material, preparing bid documents, and inspecting construction. Worked with contractors, sub-contractors, landmen and the affected public to ensure the projects stayed on budget and on schedule.

As an Engineer with the Texas Public Utility Commission, reviewed and recommended acceptance or denial of over 50 applications for Certificates of Convenience and Necessity. Review included determining if the project was needed; reasonability of cost; and probable environment and community impact of the line routing.

As Engineering Manager with the PUC, supervised engineering staff in the review of all aspects of all transmission line Certificate of Convenience and Necessity applications made in Texas. Reviewed and approved all staff recommendation or testimony concerning transmission line CCNs. All recommendations were accepted and endorsed by the Commission.

As Engineering Manager, led the staff team to revise the Commission's rules pertaining to transmission lines. Led the effort to update and improve the application forms.

As Engineering Manager, wrote and developed booklet entitled "Transmission Line ROW" that was used to educate the Commissioners on why different ROW widths were used by the utilities and how these widths were determined.

As Engineering Manager, developed, wrote and presented numerous papers, seminars and presentations on transmission topics for presentation to Commission staff, Legislative staff and industry groups.

Served as an expert witness for the Texas Public Utility Commission (PUC) for contested transmission line applications. Testified on need, routing, environmental and community impacts, and costs. Commission accepted recommendations all his recommendations.

Served as project leader to develop the transmission line construction reporting rules and forms that are currently used by the Commission.

As a Consultant, prepared and defended expert testimony for municipal client regarding the projected cost of transmission projects to be included in rate base.

As a Consultant, prepared expert testimony on behalf of landowners impacted by proposed transmission lines.

EXHIBIT HLH-2

LIST OF CCN DOCKETS CONTAINING TESTIMONY OF  
Harold L. Hughes Jr.  
BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS

Docket 7356	Texas Utilities Transmission CCN Scope of Testimony: CCN Evaluation August 1987
Docket 7437	Rio Grande Electric Cooperative Transmission CCN Scope of Testimony: CCN Evaluation November 1987
Docket 7726	Brazos Electric Power Cooperative CCN Scope of Testimony: CCN Analysis March 1988
Docket 9728	Texas New Mexico Power Company Transmission Line CCN Scope of Testimony: CCN Evaluation July 1991
Docket 29684	Application of LCRA Transmission Services Corporation to Amend its Certificate of Convenience and Necessity for a 138 kV Transmission Line in Kendall and Bexar Counties Scope of Testimony: Transmission line route May 2005
Docket 30168	Application of TXU Electric Delivery to Amend a Certificate of Convenience and Necessity for a Proposed Transmission Line in Jack, Wise and Denton Counties Scope of Testimony: Transmission line route March 2005
Docket 31011	Application of TXU Electric Delivery Company to Amend a Certificate of Convenience and Necessity for a Proposed Transmission Line within Dallas, Johnson, Tarrant, and Ellis Counties Scope of Testimony: Transmission line route January 2006
Docket 33800	Application of Brazos Electric Power Cooperative, Inc. for a Certificate of Convenience and Necessity for a Proposed Transmission Line in Johnson and Hood Counties, Texas Scope of Testimony: Transmission line route July 2007

- Docket 33844      Application of LCRA Transmission Services Corporation to Amend its Certificate of Convenience and Necessity for a 138 kV Transmission Line in Kerr County  
Scope of Testimony: Transmission line route  
August 2007
- Docket 33978      Application of LCRA Transmission Services Corporation to Amend its Certificate of Convenience and Necessity for a 345 kV Transmission Line in Caldwell, Guadalupe, Hays Travis and Williamson Counties  
Scope of Testimony: Transmission line route  
September 2007
- Docket 36995      Application of Oncor Electric Delivery Company, LLC to Amend a Certificate of Convenience and Necessity for a Proposed Transmission Line Within Bell, Falls, Milam, and Robertson Counties  
Scope of Testimony: Transmission line route  
November 2009 – Direct testimony  
December 2009 – Intervenor cross testimony
- Docket 37463      Application of Oncor Electric Delivery Company, LLC to Amend its Certificate of Convenience and Necessity for the Newton-Killeen 345 kV CREZ Transmission Line in Bell, Burnet and Lampasas Counties, Texas  
Scope of Testimony: Transmission line route  
December 2009 – Direct testimony  
January 2010 – Cross rebuttal testimony
- Docket 36978      Application of Electric Transmission Texas, LLC to Amend a Certificate of Convenience and Necessity to Construct a Proposed Uvalde to Castroville 138 kV Transmission Line in Uvalde and Medina Counties, Texas  
Scope of Testimony: Transmission line route  
February 2010
- Docket 38230      Application of Lone Star Transmission, LLC for a Certificate of Convenience and Necessity for the Central A to Central C to Sam Switch/Navarro Proposed CREZ Transmission Line  
Scope of Testimony: Transmission line route  
August 2010

## **ERCOT Organization Background<sup>1</sup>**

### **1. Overview**

Founded in 1970, ERCOT is an independent, not-for-profit organization responsible for overseeing the reliable and safe transmission of electricity over Texas' main electricity power grid. As the independent system operator (ISO) since 1996, ERCOT has been the broker between competitive wholesale power buyers and sellers. ERCOT ISO also provided the platform upon which Texas' electric utility industry made the transition to state-legislated retail competition, which began on January 1, 2002.

### **2. The Power Grid**

Texas' main electric power grid is a 40,000-mile network of long-distance, high-voltage transmission lines and substations that carries bulk electricity to multiple utility companies for distribution to their customers. This grid, which has an approximately 72,700 megawatts of available generation capacity, delivers approximately 85 percent of Texas' overall power usage to 22 million Texans.

### **3. Coverage Area**

The ERCOT coverage area includes approximately 75 percent of the land area in Texas. The region does not include the El Paso region, the northern panhandle, a small area around Texarkana and a small portion of the region around Beaumont.

### **4. Members**

ERCOT's members include consumers, cooperatives, independent generators, independent power marketers, retail electric providers, investor-owned electric utilities (transmission and distribution providers), and municipal-owned electric utilities.

### **5. Governance**

ERCOT is a membership-based 501 (c)(4) nonprofit corporation, governed by a board of directors and subject to oversight by the Public Utility Commission of Texas (PUC) and the Texas Legislature. The ERCOT board of directors is a 16-member "hybrid" group that includes six market participants from each of the six electric utility market groups, three consumer representatives, five independent (unaffiliated) members, the ERCOT CEO and the Texas PUC chair (non-voting). The Technical Advisory Committee (TAC) makes policy recommendations to the board of directors. TAC is assisted by five standing subcommittees, as well as numerous workgroups and task forces.

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<sup>1</sup> ERCOT Web page at: <http://www.ercot.com/news/mediakit/backgrounder>



**6. Facilities**

ERCOT operates out of two locations:

- **Executive and Administration Center** - The 45,000-square-foot executive and administration center near the Austin-Bergstrom Airport houses a backup operations center.
- **Operations Center** - ERCOT's operations activities are headquartered in Taylor 25 miles northeast of Austin in an 85,000-square-foot operations center and additional 75,000-square-foot facility.

## About SPP<sup>2</sup>

### Our History

Southwest Power Pool dates to 1941, when 11 regional power companies joined to keep an Arkansas aluminum factory powered around the clock to meet critical defense needs. After the war, SPP's Executive Committee decided the organization should be retained to maintain electric reliability and coordination. After the Northeast power interruption in 1965, other reliability councils were organized.

In 1968, SPP joined 12 other entities to form what became the North American Electric Reliability Corporation (NERC). SPP incorporated as an Arkansas not-profit organization in January 1994. The Federal Energy Regulatory Commission (FERC) approved SPP as a Regional Transmission Organization in 2004 and a Regional Entity in 2007.

In North America, SPP is one of nine Independent System Operators/Regional Transmission Organizations (ISOs/RTOs) and one of eight NERC Regional Entities. SPP is mandated by the FERC to ensure reliable supplies of power, adequate transmission infrastructure, and competitive wholesale prices of electricity.

ISOs/RTOs are the "air traffic controllers" of the electric power grid. ISOs/RTOs do not own the power grid. They independently operate the grid minute-by-minute to ensure that power gets to customers and to eliminate power shortages.

SPP is based in Little Rock, Arkansas, and has over 450 employees.

SPP provides the following services to members in nine states: Arkansas, Kansas, Louisiana, Mississippi, Missouri, Nebraska, New Mexico, Oklahoma, and Texas

**Compliance:** The SPP Regional Entity enforces compliance with federal and regional reliability standards for users, owners, and operators of the region's bulk power grid.

**Market Operations:** In the Energy Imbalance Service (EIS) market, participants buy and sell wholesale electricity in real-time. If a utility requires more energy than it scheduled, the market provides the utility another option to buy the "extra" energy at real-time prices to make up the difference and meet its demand. Participants can use the EIS market to get the least expensive available energy from other utilities. SPP's 2009 wholesale market transactions totaled \$1.14 billion. SPP is planning for future energy markets..

**Regional Scheduling:** SPP ensures that the amount of power sent is coordinated and matched with power received.

**Reliability Coordination:** SPP monitors power flow throughout our footprint and coordinates regional response in emergency situations or blackouts.

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<sup>2</sup> SPP web page at: <http://www.spp.org/section.asp?pageID=1>

**Tariff Administration:** SPP provides "one stop shopping" for use of the region's transmission lines and independently administers an Open Access Transmission Tariff with consistent rates and terms. SPP's 2009 transmission market transactions totaled \$486 million.

**Training:** SPP offers continuing education for operations personnel at SPP and throughout the region. In 2009, the SPP training program awarded ~17,000 continuing education hours to 444 operators from 30 member organizations.

**Transmission expansion planning:** SPP's planning processes seek to identify system limitations, develop transmission upgrade plans, and track project progress to ensure timely completion of system reinforcements.

**Contract Services:** SPP provides reliability, tariff administration, and scheduling for non-members on a contract basis.

## CREZ Program Overview<sup>3</sup>

**Description of CREZ:** The utilities code section 39.904 in conjunction with Senate Bill 20 (2005) established Texas's Renewable Energy Program and directed the PUC to identify Competitive Renewable Energy Zones (CREZ). A CREZ is a geographic area where wind generation facilities will be constructed. In 2008, PUC issued order 33672 designating five CREZs for the generation of wind power and defining the required transmission upgrades to deliver wind generated energy to Texas consumers.

**Transmission build-out program:** The CREZ project is the PUC's response to a public mandate to increase renewable energy in Texas to serve the electric needs of the state. The Texas Legislature passed Senate Bill (SB) 7 in 1999, which restructured the state's electric industry and allowed Transmission Service Providers (TSPs) to offer transmission services to other utilities throughout Texas. Ultimately, the CREZ effort will significantly increase Texas's current level of wind generation capacity to 18,456 MW.

**Benefits to community:** CREZ projects are primarily designed to move electricity generated by renewable energy sources (primarily wind) from the remote parts of Texas (i.e., West Texas and the Texas Panhandle) to the more heavily populated areas of Texas (e.g., Austin, Dallas-Fort Worth, San Antonio). However, several of these lines also will provide transmission infrastructure necessary to meet the long-term needs of the growing area west of the I-35 corridor between San Antonio and Killeen. In addition, more clean energy will be brought to customers which will improve air quality in Texas.

**CREZ zones:**

- Panhandle A
- Panhandle B
- Central West
- Central
- McCamey

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<sup>3</sup> PUC website at: <http://www.texascrezprojects.com/overview.aspx>



