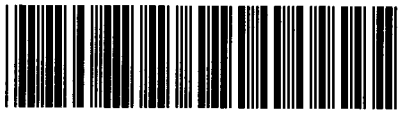

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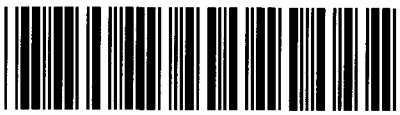

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SOAH DOCKET NO. 473-16-2751
PUC DOCKET NO. 45624

APPLICATION OF THE CITY OF GARLAND TO AMEND A CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE RUSK TO PANOLA DOUBLE-CIRCUIT 345-KV TRANSMISSION LINE IN RUSK AND PANOLA COUNTIES	§	STATE OFFICE OF ADMINISTRATIVE HEARINGS

DIRECT TESTIMONY

OF

WARREN LASHER

ON BEHALF OF

ELECTRIC RELIABILITY COUNCIL OF TEXAS, INC.

APRIL 27, 2016

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I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Warren Lasher. My business address is 2705 West Lake Drive, Taylor, Texas 76574.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Electric Reliability Council of Texas, Inc. ("ERCOT") as Director of System Planning. I have held this position since March 2012.

Q. PLEASE DESCRIBE YOUR ROLE AS DIRECTOR OF SYSTEM PLANNING.

A. I oversee multiple departments in ERCOT responsible for different planning-related functions, including planning the ERCOT transmission system, forecasting load, and assessing resource adequacy.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I received Bachelor of Arts degrees in both Mathematics and Music from Yale University in 1987, a Master of Environmental Management degree from Duke University in 1991, and a Master of Science degree in Computer Science from the University of Alabama at Birmingham in 1999.

Q. HAVE YOU PREVIOUSLY TESTIFIED IN A REGULATORY PROCEEDING?

A. Yes, I testified before the Public Utility Commission of Texas ("PUC" or "Commission") in Docket No. 33672, *Commission Staff's Petition for Designation of Competitive Renewable Energy Zones*, in Docket No. 42511, *Complaint of Calpine Corporation and NRG Energy, Inc. Against the Electric Reliability Council*

of Texas and Appeal of Decision Concerning the Houston Import Project, and in the combined Dockets No. 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, Texas* and Docket No. 44649, *Application of Cross Texas Transmission, LLC to Amend its Certificate of Convenience and Necessity for the Limestone to Gibbons Creek 345 kV Transmission Line in Brazos, Freestone, Grimes, Leon, Limestone, Madison and Robertson Counties, Texas*.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My testimony addresses the following two items in the list of Issues to be Addressed included in the Preliminary Order in this docket dated March 22, 2016:

- At what point of development should ERCOT include a proposed merchant DC tie project in the planning models?
- How should the uncertainty of whether DC ties will be exporting or importing be addressed in transmission planning?

Q. WHAT DOCUMENTS AND INFORMATION DID YOU CONSIDER IN THE DEVELOPMENT OF YOUR TESTIMONY?

A. I have considered the following materials in developing my testimony:

- Relevant sections of the 2016 Regional Transmission Plan Study Scope and Process document
- Relevant sections of the ERCOT Protocols and the ERCOT Planning Guide

- Relevant North American Reliability Corporation (NERC) Reliability Standards

Q. WAS YOUR TESTIMONY AND ANALYSIS PREPARED BY YOU OR UNDER YOUR DIRECT SUPERVISION?

A. Yes.

III. INCORPORATING DC TIES IN TRANSMISSION PLANNING

Q. AT WHAT POINT IN PROJECT DEVELOPMENT SHOULD A NEW DC TIE BE FIRST INCLUDED IN TRANSMISSION PLANNING STUDIES?

A. New generation resources and discrete customer loads are included in transmission planning studies such as the Regional Transmission Plan (RTP) when the projects reach a milestone that indicates they are highly likely to be completed. New generation resources are included in transmission planning models when they achieve the requirements specified in Planning Guide Section 6.9. These requirements include an Interconnection Agreement (IA), submittal of collateral required in that IA, notice to proceed with construction of the interconnection facilities, an air emissions permit (if required), and proof of sufficient water resources for plant cooling (if required). Each Transmission and Distribution Service Provider (TDSP) has its own process and criteria for inclusion of new load customers in the ERCOT regional planning models. However, it is my understanding that TDSPs typically require new load customers to sign a contract with the TDSP and to provide collateral for any system improvements before their expected electrical demand is included in system models.

I believe a similar rule should apply to new DC tie projects: they should be included

in transmission planning models when they reach a milestone indicating that they are likely to be completed. This milestone could be tied to collateralization of the necessary transmission system upgrades for interconnecting the project and a notice to proceed with construction of the interconnection facilities, consistent with the treatment of generation resources.

Q. WHAT ARE THE IMPLICATIONS OF INCLUDING A NEW DC TIE PROJECT THAT DOES NOT GET COMPLETED IN TRANSMISSION PLANNING STUDIES?

A. Any transmission improvements that are endorsed based on studies that include a speculative DC tie project may in fact not be necessary if that DC tie project is not completed. The costs for these projects would be borne by customers in ERCOT. Transmission planning is an inclusive process and the resulting projects are derived from the amalgamation of all of the input assumptions and data. Once a new resource or load is included in the model input database, any recommended transmission projects in the general vicinity will likely have been affected by the presence of that resource or load.

Conversely, including a speculative new DC tie in planning studies and assuming that this device will be available to import power into a load pocket could mask the need for a transmission project to reliably serve customer demand.

Q. AT A HIGH LEVEL, WHAT ARE THE ISSUES ASSOCIATED WITH OPERATIONAL ASSUMPTIONS FOR DC TIES THAT ARE INCLUDED IN TRANSMISSION PLANNING STUDIES?

A. The general purpose of transmission planning is to identify future system needs for

improvements in grid infrastructure. When evaluating future transmission system needs, the assumptions regarding operation of DC Ties can have an impact on study results. These devices typically can operate anywhere between exporting at full capacity (and having an impact similar to a system load at that node) and importing at full capacity (and having a system impact similar to a generation resource at that node). If we assume that the DC tie will be exporting power, we will see different power flows in the system analysis and potentially different system needs than if we assume the DC tie will be importing.

Q. HOW ARE DC TIES INCLUDED IN CURRENT ERCOT TRANSMISSION PLANNING STUDIES?

A. ERCOT conducts two types of transmission planning studies: reliability studies, which focus on transmission projects that are needed to reliably serve expected customer demand within established applicable reliability criteria, and economic studies, which are used to identify projects that increase the efficiency of system operations. We use different assumptions for the DC ties in these two types of studies.

Q. HOW ARE DC TIES MODELED IN RELIABILITY TRANSMISSION PLANNING STUDIES?

A. Reliability studies are primarily implemented using steady-state and system stability models, which evaluate reliability criteria violations under a snapshot of stressed system conditions. Customer demand (system load) in the model is fixed at each substation, usually at levels consistent with system peak customer demand, and the output of generation resources is adjusted to serve these loads within

limitations of the existing transmission grid. DC ties are modeled in these studies consistent with DC tie activity seen in recent periods of peak customer demands. In this way, any transmission projects necessary to support future DC tie operations consistent with historical activity will be identified. For the current Regional Transmission Plan steady-state reliability analysis, the DC-ties are being modeled in the following manner:

DC-Tie	Capacity (MW)	Planning Model Assumption (MW)
East	600	599.4 Import
North	220	219.4 Import
Laredo	100	100 Export
Railroad	300	300 Export
Eagle Pass	30	30 Export

Q. HOW ARE DC TIES MODELED IN ECONOMIC TRANSMISSION PLANNING STUDIES?

A. ERCOT economic transmission planning studies are conducted using hourly production-cost models, which simulate the operation of generation resources to serve customer demand across the 8,760 hours of a future year, and allow planners to evaluate the savings in system costs afforded by providing more transmission capacity for low-cost, efficient generation resources. In order to model a DC tie in these studies, the activity of that device in all hours of the year has to be determined. Similar to reliability studies, these input assumptions are based on historical usage of each of the DC ties. In the past few years, the North and East DC ties have often

been used to import power when they have operated. Consistent with this overall trend, these devices are modeled as generation resources with bid prices consistent with an efficient combined-cycle gas generator in economic transmission planning studies. The three DC ties on the Texas-Mexico border have typically been used to export power when they have operated. In order to capture the diurnal and weekly operational patterns of these devices, the actual hourly operations of these devices for a recent one-year period was extracted from the ERCOT historical operational database and entered into the production cost modeling input database.

Q. ARE THESE MODELING CONSIDERATIONS FOR DC TIES SPECIFIED IN ANY ERCOT BINDING DOCUMENTS?

A. No. The assumptions for including the DC ties in reliability analyses are specified in the Regional Transmission Plan Scope document, which is not a binding document. This document is reviewed with stakeholders during Regional Planning Group meetings at the start of each year, and the assumptions included in this document are adjusted from year to year. The assumptions for the DC ties in economic studies are discussed with RPG participants when the results of RTP economic studies are presented.

Q. IS IT POSSIBLE THAT THESE MODELING CONSIDERATIONS FOR DC TIES WILL BE ADJUSTED IN FUTURE STUDIES?

A. Yes. The goal of transmission planning is to have sufficient infrastructure to allow the DC ties to be operated in a manner consistent with the future needs of market participants. ERCOT Planning currently accomplishes this by modeling the DC ties in planning studies consistent with recent historical operations and assessing

any resulting system constraints. In addition, we communicate with ERCOT Operations staff in order to appropriately account for any real-time operational limitations of DC tie operations in Planning studies. If future system conditions indicate that another method of modeling the DC ties will better account for expected future DC tie operations, ERCOT Planning would likely propose revisions to these modeling assumptions in discussions with RPG participants.

Q. WHAT WOULD BE THE IMPLICATIONS OF ASSUMING DC TIE OPERATIONS IN PLANNING STUDIES THAT ARE NOT CONSISTENT WITH ACTUAL OPERATION OF THE DEVICE?

A. Similar to the issues raised with inclusion of a speculative DC tie, assuming exports or imports over a DC tie that are greater than are expected in real-time operations could lead to endorsement of transmission projects in the vicinity of the DC tie that may not be needed.

Q. HOW WOULD YOU EXPECT A NEW LARGE DC TIE BETWEEN ERCOT AND THE SOUTHEASTERN ELECTRIC RELIABILITY COUNCIL (SERC) REGION TO BE MODELED IN FUTURE PLANNING STUDIES?

A. I'm not sure at this time. As I have noted, ERCOT Planning currently uses operational data to inform how we model DC ties in reliability and economic planning studies. A new DC tie, especially one that is larger than existing ties and connects ERCOT to a different portion of the Eastern Interconnect than do our existing DC ties, may not follow the operational patterns of the existing DC ties. Our future study assumptions for a device like the proposed Southern Cross DC tie

could be informed by modeling data presented by other parties in this docket; we could also conduct a high-level analysis of market conditions on the other end of the proposed DC tie to develop an informed opinion of likely project utilization. Another approach may be to use modeling assumptions that minimize the need for system improvements in the vicinity of the new DC tie project until we see market operations results indicating a desire from market participants to utilize the device beyond existing local transmission system capacity.

Q. DO THESE ISSUES REQUIRE RESOLUTION IN THIS DOCKET, OR CAN THEY BE RESOLVED THROUGH ERCOT STAKEHOLDER DISCUSSIONS ?

A. I believe these issues can be resolved by ERCOT stakeholders through discussions in RPG meetings and possibly the nodal protocol and Planning Guide revision process if the Commission elects to not address these issues at this time.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

CERTIFICATE OF SERVICE

I hereby certify that a copy of this document was served on all parties of record on April 27, 2016 by posting on the PUC Interchange in accordance with the provisions regarding service in SOAH Order No. 3 in this proceeding.