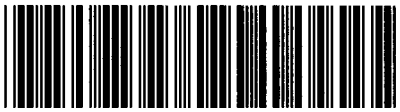

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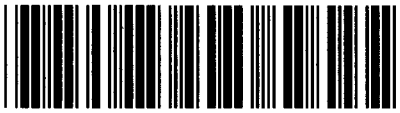

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SOAH DOCKET NO. 473-16-2751
PUC DOCKET NO. 45624

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**

ERCOT'S RESPONSES TO COMMISSION STAFF'S SECOND REQUEST FOR INFORMATION TO ELECTRIC RELIABILITY COUNCIL OF TEXAS QUESTION NOS. STAFF 2-1 THROUGH STAFF 2-9

Electric Reliability Council of Texas, Inc. (ERCOT) provides the attached Responses to *Commission Staff's Second Request for Information to Electric Reliability Council of Texas Staff RFI No. 2-1 through RFI No. 2-9*, filed on May 2, 2016. ERCOT's responses are due on May 12, 2016 and are therefore timely filed. ERCOT stipulates that all parties may treat these responses as if they were filed under oath.

Respectfully submitted,

Chad V. Seely
Vice President and General Counsel
Texas Bar No. 24037466
(512) 225-7035 (Phone)
(512) 225-7079 (Fax)
chad.seely@ercot.com

Nathan Bigbee
Assistant General Counsel
Texas Bar No. 24036224
(512) 225-7093 (Phone)
(512) 225 7079 (Fax)
nathan.bigbee@ercot.com

Jennifer N. Littlefield
Corporate Counsel
Texas Bar No. 24074604
(512) 225-7179 (Phone)
(512) 225-7079 (Fax)
jennifer.littlefield@ercot.com

ERCOT
7620 Metro Center Drive
Austin, Texas 78744

ATTORNEYS FOR ELECTRIC
RELIABILITY COUNCIL OF TEXAS, INC.

CERTIFICATE OF SERVICE

I hereby certify that a copy of this document was served on all parties of record on May 12, 2016, by posting on the PUC Interchange in accordance with the provisions regarding service in SOAH Order No. 3 in this proceeding.

ERCOT'S RESPONSES TO COMMISSION STAFF'S SECOND REQUEST FOR INFORMATION TO THE ELECTRIC RELIABILITY COUNCIL OF TEXAS STAFF RFI NO. 2-1 THROUGH RFI NO. 2-9

Staff 2-1 **Please refer to the Direct Testimony of Ted Hailu at page 9, lines 4-13. If the ERCOT protocols were amended to create a new type of market participant, who would bear the costs of amending the protocols and subsequent changes to ERCOT's system?**

Response:

The costs of amending the ERCOT protocols and subsequent system changes needed to create a new type of market participant would be paid from ERCOT's annual budget, part of which is set aside for protocol changes and associated projects. ERCOT's budget is funded through the system administration fee approved by the Public Utility Commission of Texas (Commission).

PREPARER: Ted Hailu

WITNESS: Ted Hailu

Staff 2-2 **Please refer to the Direct Testimony of Dan Woodfin at page 9, lines 11-19. Please provide an estimate of how much it would cost to modify ERCOT's Security Constrained Economic Dispatch system to add the functionality to dispatch the proposed Southern Cross DC Tie? Who would bear these costs?**

Response:

ERCOT has not estimated the cost of modifying the SCED system so that it could dispatch the Southern Cross DC Tie, since the design of any such modification would be dependent on the market rules that would need to be adopted and the coordination rules that would be put in place with the control area on the other side of the tie.

The costs of amending the ERCOT protocols and subsequent system changes needed to modify the SCED system to add the functionality to dispatch the proposed Southern Cross DC Tie would be paid from ERCOT's annual budget, part of which is set aside for protocol changes and associated projects. ERCOT's budget is funded through the system administration fee approved by the Commission.

PREPARER: Dan Woodfin

WITNESS: Dan Woodfin

Staff 2-3 **Please refer to the Direct Testimony of Dan Woodfin at pages 9-10. Please provide an estimate of how much it would cost to create a congestion management plan for the proposed Southern Cross DC Tie. Who would bear these costs?**

Response:

ERCOT has not estimated the cost of developing Constraint Management Plans (CMPs) that might be necessary as a result of increased flows on the system due to the Southern Cross DC Tie, since the development of any such CMPs would be dependent on the specific system conditions that result in the need for the CMP. Any CMP that included reduction of transfers over the Southern Cross DC Tie would also require coordination with the Reliability Coordinator and Balancing Authority on the other side of the DC Tie. Coordination would be needed during the CMP development and initiation. The implementation of such a CMP may be similar to the current process for curtailing flows on DC Ties.

The costs of amending the ERCOT protocols and subsequent system changes needed to modify the SCED system to create a CMP for the proposed Southern Cross DC Tie would be paid from ERCOT's annual budget, part of which is set aside for protocol changes and associated projects. ERCOT's budget is funded through the system administration fee approved by the Commission.

PREPARER: Dan Woodfin

WITNESS: Dan Woodfin

Staff 2-4 **Please refer to the Direct Testimony of Dan Woodfin at pages 9-10. Pleases provide examples of the situations in which a congestion management plan would be unable to manage congestion. Please indicate the anticipated frequency of the situations as well as significance.**

Response:

ERCOT cannot anticipate all possible situations where a CMP might be unable to manage the congestion. CMPs are only used in situations where the SCED system is unable to solve any base case or post-contingency overloads.

Generally, if imports over the Southern Cross DC Tie combined with economically dispatched generation in the area around the DC Tie would result in overloads on the ERCOT transmission system, SCED will lower the dispatch of the nearby generation to relieve the overloads. ERCOT would only design a CMP for this situation if it would not be possible for SCED to lower nearby generation sufficiently to resolve the overload, or if the ERCOT system would be short of capacity to balance system load with nearby generation backed down. Similarly, if nearby generation were economically dispatched to a low level such that exports on the DC tie resulted in transmission overloads, SCED would increase the output of this nearby generation to alleviate any overloads. A CMP would only be used if SCED could not, or was not anticipated to be able to, alleviate the overloads in the importing or exporting case.

PREPARER: Dan Woodfin

WITNESS: Dan Woodfin

Staff 2-5 Please refer to the Direct Testimony of Dan Woodfin at page 12, lines 11-16.

a) **Please describe the additional tools and processes necessary to evaluate whether a request by the proposed Southern Cross DC Tie to import or export power can be accommodated.**
b) **Please provide an estimate of how much it would cost to implement additional tools and processes to evaluate whether a request by the proposed Southern Cross DC Tie to import or export power can be accommodated.**
c) **Who would bear these costs?**

Response:

ERCOT would need to develop a study tool that would include the requested Southern Cross DC Tie ramp in the calculation of the expected net load ramp in order to compare this expected net ramp requirement to the ramping capability of the system during the periods when a requested transfer over the Southern Cross DC Tie would be ramping. This analysis would then need to be added to the procedures for the ERCOT DC Tie Desk Operator to perform for each requested tag.

ERCOT has not estimated the cost of implementing this tool or implementing this enhanced procedure.

The costs of implementing additional tools and processes to evaluate whether a request by the proposed Southern Cross DC Tie to import or export power can be accommodated would be paid from ERCOT's annual budget, part of which is set aside for protocol changes and associated projects. ERCOT's budget is funded through the system administration fee approved by the Commission

PREPARER: Dan Woodfin

WITNESS: Dan Woodfin

Staff 2-6 **Please refer to the Direct Testimony of Dan Woodfin at page 14, lines 1-18. Please provide an estimate of how much it would cost to expand ERCOT's analytical capabilities to incorporate the proposed Southern Cross DC Tie into outage coordination. Who would bear these costs?**

Response:

ERCOT has not estimated the cost of expanding the outage coordination function to incorporate the Southern Cross DC Tie. The cost would be dependent on the resolution of certain issues related to the assumptions ERCOT should make about future DC Tie flows in the outage coordination process. This resolution would benefit from stakeholder discussion.

The amount of resources needed to incorporate the Southern Cross DC Tie into outage coordination may vary greatly depending on what policy decisions are made. For example, suppose it were determined that ERCOT should implement the following process:

> ERCOT should evaluate outages assuming no flows on the Southern Cross DC Tie. If outages were submitted that would limit the flows on the Tie, ERCOT would approve these outages if the outages are received more than a certain number of days in advance of the Operating Day. During these outages, ERCOT would calculate and post a reduced transfer capability over the Tie (reflecting the impact of the approved outages) and would only approve OATI tags for less than this value. On the other hand, if the outages were received after a certain number of days in advance, or if a transfer over the tie has already been approved, the requested outage would be denied.

With this process in place, ERCOT would not require substantially more resources for outage coordination, although there would be additional resources needed in the Operations Support group due to the more-complicated process for studying and setting limits for the next seven days.

On the other hand, if it is not desired to set limits in this manner, it may require a more complicated process of outage coordination that would require more resources in the outage coordination process to run multiple scenarios of tie transfers for each study of outages that may affect the tie transfer capability.

The costs of expanding ERCOT's analytical capabilities to incorporate the proposed Southern Cross DC Tie into outage coordination would be paid from ERCOT's annual budget, part of which is set aside for protocol changes and associated projects. ERCOT's budget is funded through the system administration fee approved by the Commission.

PREPARER: Dan Woodfin

WITNESS: Dan Woodfin

Staff 2-7 **Please refer to the Direct Testimony of Dan Woodfin at pages 15-16. Please provide an estimate of how much it would cost ERCOT to negotiate one or more agreements with the independent system operator/regional transmission organization and/or reliability coordinator on the eastern end of the proposed Southern Cross DC tie. Who would bear these costs?**

Response:

ERCOT has not estimated the cost of negotiating this kind of agreement with the appropriate entities on the other side of the Southern Cross DC Tie. The cost would be dependent on the number of entities on the other side of the DC Tie that need to be involved and their level of cooperation with ERCOT. This negotiation would likely be accomplished with existing Operations and Legal staff.

The costs of negotiating agreements with other entities would be paid from ERCOT's annual budget, part of which is set aside for protocol changes and associated projects. ERCOT's budget is funded through the system administration fee approved by the Commission.

PREPARER: Dan Woodfin

WITNESS: Dan Woodfin

Staff 2-8 **Please refer to the Direct Testimony of Dan Woodfin at page 17, lines 23-24. Please provide an estimate of how much it would cost ERCOT to procure additional ancillary service to ensure reliability margins are maintained if the proposed Southern Cross DC Tie is interconnected to ERCOT. Who would bear these costs?**

Response:

ERCOT has not estimated the cost of the additional ancillary services that might be needed with the addition of the Southern Cross DC Tie becoming the new Most Severe Single Contingency (MSSC). First, it would have to be determined how much reliability margin will be maintained in the ERCOT Region.

Currently, ERCOT procures sufficient responsive reserves to maintain sufficient system frequency response to withstand the frequency dip from the loss of one of the units at the South Texas Project (STP) nuclear power plant (which is the MSSC) and the simultaneous loss of the second STP unit without activating the underfrequency load shed relays that are designed as a safety net against severe system disturbances. The relays automatically shed up to 25% of the system load in three steps. This level of responsive reserves also allows ERCOT to recover system frequency for a trip of the MSSC within 15 minutes, maintain its frequency response measure above the interconnection frequency response obligation, and provides some margin above the minimum level required to meet the various applicable NERC BAL Standards.

If the importing Southern Cross DC Tie became the MSSC for ERCOT, it will be necessary for ERCOT to study and discuss with stakeholders what level of reliability margin should be maintained (for example, should the level of responsive reserves be set based on the simultaneous loss of the 2000 MW Southern Cross DC Tie and one unit at the STP, or should it be the Tie and one of the nearby coal units). Then, the larger of that number or the amount of responsive reserves necessary to recover frequency within 15 minutes following the trip of the new MSSC would have to be procured.

It is also possible that NERC would make a similar change to the calculation for the interconnection frequency response obligation under BAL-003, which is currently based on the simultaneous trip of the two STP units. While ERCOT does not know what the outcome of ERCOT stakeholder and NERC decisions might be, they would not result in a lower amount of responsive reserves being needed. Additionally, the appropriate level of Load Resources that are procured as part of the responsive reserves will have to be assessed as well. Finally, any increase in the amount of responsive reserves and the addition of a 2000MW import would change the price at which all responsive reserves would be procured, but ERCOT has not estimated what that impact on prices might be.

As discussed in the Direct Testimony of Dan Woodfin at page 18-19, the Southern Cross DC Tie might also cause an increase in ancillary services costs when the tie is exporting. Neither the costs nor the type of ancillary services that would be needed to cover the potential system risk from a trip of the tie under these conditions have been determined by ERCOT.

The costs of procuring additional ancillary services would be allocated to Load Serving Entities on a load ratio share basis.

PREPARER: Dan Woodfin

WITNESS: Dan Woodfin

Staff 2-9 **Please refer to the Direct Testimony of Dan Woodfin at page 12, lines 9-11. What would be the consequences of ERCOT denying a scheduled transaction over the proposed Southern Cross DC Tie?**

Response:

Unless ERCOT or the system on the other side of the Southern Cross DC Tie was in an emergency condition that the capacity across the tie would help alleviate, there should not be a reliability consequence from denying the transaction during the approval process that is the subject of the discussion on page 12, lines 9-11 of the Direct Testimony of Dan Woodfin. The consequences would be limited to the lost economic value of the transfer. If the eTag has already been approved, then curtailing the transfer would follow the procedure described in the testimony of Dan Woodfin, page 8, lines 8-16, which might have a reliability consequence on the receiving side of the DC Tie.

PREPARER: Dan Woodfin

WITNESS: Dan Woodfin