



Southern Cross Transmission (SCT) DC Tie Planning Study – Scope

Regional Planning Group
April 24, 2018

PUCT Docket 46304 Order Addressed

❑ Directive 5:

ERCOT shall study and determine how best to model the Southern Cross DC tie in its transmission planning cases, make any necessary revisions to its standards, guides, systems, and protocols as appropriate, and certify to the Commission when it has completed these actions.

❑ Directive 6:

ERCOT shall study and determine what transmission upgrades, if any, are necessary to manage congestion resulting from power flows over the Southern Cross DC tie, make any necessary revisions to its standards, guides, systems, and protocols as appropriate, and certify to the Commission when it has completed these actions.

❑ Directive 8*:

ERCOT shall (a) study and determine whether Southern Cross Transmission or any other entity scheduling flows across the Southern Cross DC tie should be required to provide or procure voltage support service or primary frequency response, or their technical equivalents, (b) implement any necessary revisions to its standards, guides, systems, and protocols, as appropriate, and (c) certify to the Commission when it has completed these actions.

** This study will address the voltage support issues part of the directive 8*

Introduction

- The objective of this SCT interconnection study is to identify transmission facility upgrades that will be required to meet the ERCOT and NERC Transmission Planning reliability standards and to manage congestion resulting from power flows over the Southern Cross DC tie.

SCT Planning Studies Flow Assumptions

Directive 6 Steady State	Summer Peak	350 MW Import
	HWLL	2100 MW Export
Directive 6 Dynamic Stability	Summer Peak	2000 MW Import/ 2100 MW Export
	HWLL	2000 MW Import/ 2100 MW Export

The above assumptions are based on the “Southern Cross Planning Study Flow Assumptions” discussed at the Jan. 2018 PLWG:

http://www.ercot.com/content/wcm/key_documents_lists/140232/ERCOT-Southern_Cross_Flow_Assumptions.pptx

Study Assumptions

□ Study Cases

- Steady-State Study: constructed from the Final 2018 RTP reliability summer peak case 18RTP_2021_SUM_NNC & 2021_High-Wind Low Load case
- Dynamic Study: The most recent DWG cases that match best with the steady-state cases.
 - Summer Peak:
 - » 2,000 MW Import
 - » 2,100 MW Export
 - High-Wind Low Load:
 - » 2,000 MW Import
 - » 2,100 MW Export
- Economic Study (if needed): 2023 economic study case from 2018 RTP
- Study Area:
 - The Study Region will include the North, North Central, South Central and East Weather Zones

Study Assumptions (cont.)

- Overall assumptions on Generation Additions and Retirements , Renewable Generation Dispatch, Switchable Generation and Exceptions, Reserve Requirements, Fuel Price and emissions will be consistent with the 2018 RTP
- Any additional Transmission projects expected to be in-service within the Study Region by 2021 will be added to the case
- Generator additions that meet Planning Guide Section 6.9 criteria at the time of the study will be added to the case
- Load outside of Study Region will be scaled down as necessary to balance any load-generator imbalance to accommodate Planning Guide Section 6.9 6.9 generators
- For the economic analysis, SCT flows will be modeled using a dynamic-cost supply curve (ERCOT may use outside consultant for the SCT dynamic-cost supply curve model/data).

Contingencies and Criteria

❑ Contingencies for Study Region

➤ NERC TPL-001-4 and ERCOT Planning Criteria

(http://www.ercot.com/content/wcm/current_guides/53526/04_050115.doc):

- Normal system condition (P0)
- N-1 conditions (P1, P2-1, P7)
- X-1 + N-1 {X-1 is 345 kV Auto outages}
- G-1 + N-1
- N-1-1 {N-1 is for critical 345kV line outage}

❑ Criteria

➤ Thermal

- Monitor all transmission lines and transformers in study region (excluding GSU and PUNs)
- Use Rate A for pre-contingency conditions
- Use Rate B for post-contingency conditions

➤ Voltages

- Monitor all busses 100 kV and above
- Voltages exceeding their pre-contingency and post-contingency limits
- Voltage deviations exceeding 8% on non-radial load busses

➤ Dynamic performance

- Consistent with most recent ERCOT Dynamic Assessment

Study Process

❑ Step 1 – Steady State analysis

- Steady-State Analysis will be performed to identify potential transmission upgrades needed to meet the NERC TPL and ERCOT Planning Criteria.

❑ Step 2 - Dynamic stability analysis

- Dynamic stability analysis will be performed based on the identified potential transmission upgrades in the steady state analysis.
- The stability analysis will identify any stability limits and assess the need for any additional transmission upgrades needed to meet the NERC TPL and ERCOT Planning Criteria.

❑ Step 3 – Economic Analysis (if needed)

- Economic analysis will be performed with the identified potential transmission upgrades (Steady state & Dynamic Stability) to assess any new congestion in the ERCOT system.

Deliverables & Timeline

- A report documenting key findings with any identified transmission facilities (related to SCT) that are needed to manage congestion and meet NERC or ERCOT planning criteria.
- ERCOT will file the report to the PUCT by Dec. 2018 (tentative).

QUESTIONS?

Any Stakeholder Comments – please submit to Prabhu Gnanam: ggnanam@ercot.com