



Sharyland Utilities South Plains Transmission Project – ERCOT Independent Review

RPG Meeting
November 14, 2017

Status of South Plains Transmission Project RPG Review

- ❑ ERCOT presented the study scope in the March RPG.
http://www.ercot.com/content/wcm/key_documents_lists/108860/SU_South_Plains_Transmission_Project_ERCOT_Independent_Review_Scope.pdf
- ❑ ERCOT presented updates to the study assumptions in the August RPG.
http://www.ercot.com/content/wcm/key_documents_lists/108880/Sharyland_Utilities_South_Plains_Transmission_Project_ERCOT_Update.pdf
- ❑ ERCOT presented preliminary results in the October RPG.
http://www.ercot.com/content/wcm/key_documents_lists/108888/SU_South_Plains_Transmission_Project_ERCOT_Update_10_19_2017.pdf
- ❑ Revised project options' capital cost based on Sharyland's update (on Nov. 3, 2017).
- ❑ Studied one additional option (Option A-1).
- ❑ Performed transmission outage probability study.

Project Options

Option	Description	Capital Cost (\$M)
A (SLU Option 3)	175MVA Synchronous Condenser at Windmill (1606A) Ogallala - Abernathy 345 kV line (SCK on DCKT tower) Abernathy - Grassland 345 kV line (SCK on DCKT tower)	247.5
B (SLU Option 3 w/ DCKT to Long Draw)	175MVA Synchronous Condenser at Windmill (1606A) Ogallala - Abernathy 345 kV line DCKT Abernathy - Grassland 345 kV line DCKT Grassland – Long Draw 345 kV second circuit	310.5
C (AEP Alternative 2 Phase 1)	175MVA Synchronous Condenser at Windmill (1606A) Ogallala - Abernathy 345 kV line (SCK on DCKT tower) New 345 kV BOLD line from a new substation (NSUB on Cottonwood to Edith Clarke) to Tesla	233.5
D (SLU Option 1)	Two 175MVA Synchronous Condenser at Windmill (1606A)	65.5
A-1 (SLU Option 3 without the SC at Windmill)	Ogallala - Abernathy 345 kV line (SCK on DCKT tower) Abernathy - Grassland 345 kV line (SCK on DCKT tower)	210

Panhandle Export Limits

Option	Panhandle Export Limits (MW)	Capital Cost (\$M)
Base Case	3813	N/A
A (SLU Option 3)	4582	247.5
B (SLU Option 3 w/ DCKT to Long Draw)	4792	310.5
C (AEP Alternative 2 Phase 1)	4549	233.5
D (SLU Option 1)	4204*	65.5
A-1 (SLU Option 3 without the SC at Windmill)	4206	210

* Panhandle Export limited by dynamic stability.

Economic Analysis Results (Weather Scenarios)

Option	Weather Year	Benefit/Cost Ratio	Average Benefit/Cost Ratio
A	2007 Weather Year	11.7%	14.3%
	2009 Weather Year	15.1%	
	2010 Weather Year	16.1%	
B	2007 Weather Year	11.3%	13.4%
	2009 Weather Year	14.0%	
	2010 Weather Year	15.0%	
C	2007 Weather Year	11.6%	13.3%
	2009 Weather Year	13.1%	
	2010 Weather Year	15.3%	
D	2007 Weather Year	21.7%	27.6%
	2009 Weather Year	27.4%	
	2010 Weather Year	33.6%	
A-1	2007 Weather Year	8.6%	10.2%
	2009 Weather Year	10.3%	
	2010 Weather Year	11.8%	

Panhandle Export Limits under Transmission Outages

Transmission Outage	Outage type	Panhandle Export WSCR Limit (MW)	
		Base Case	Option A
No Outage	N/A	3813	4582
Cottonwood - White River	SCKT	3641	4421
Tule Canyon - Tesla	SCKT	3691	4471
Tule Canyon - White River	SCKT	3647	4421
Alibates - Tule Canyon	SCKT	3708	4449
Tesla - Gray	SCKT	3691	4455
Cottonwood - Dermott	SCKT	3652	4438

The above outages were selected based on the Panhandle Stability Study GTC Report v1.6 as likely being among the most limiting outages.

Transmission Outage Probability Analysis

- Transmission outage probability* used in the analysis is consistent with 2017 RTP, which is based on ERCOT system wide 345 kV line outage statistics for each season.

Equipment type	Fall	Spring	Summer	Winter	Annual
Single Circuit (345-kV)	0.018	0.019	0.006	0.016	0.015

* Updated from October RPG presentation.

- Transmission outage probability analysis was performed for Option A (SLU Option 3).
- The additional production cost (PC) savings under outages is determined using base weather year 2009.

Transmission Outage Probability Analysis

Condition	Probability-weighted Savings (\$M)
Base case (no outages) savings for weather year 2009	30.57
Savings with the Outage of Cottonwood-White River CKT 1	0.61
Savings with the Outage of Cottonwood-White River CKT 2	0.61
Savings with the Outage of Tule Canyon-Tesla CKT 1	0.52
Savings with the Outage of Tule Canyon-Tesla CKT 2	0.52
Savings with the Outage of Tule Canyon-White River CKT 1	0.61
Savings with the Outage of Tule Canyon-White River CKT 2	0.61
Savings with the Outage of Alibates-Tule Canyon CKT 1	0.53
Savings with the Outage of Alibates-Tule Canyon CKT 2	0.53
Savings with the Outage of Gray-Tesla CKT 1	0.56
Savings with the Outage of Gray-Tesla CKT 2	0.56
Savings with the Outage of Cottonwood-Dermott CKT 1	0.58
Savings with the Outage of Cottonwood-Dermott CKT 2	0.58
Total	37.4

Transmission Outage Probability Analysis

- ❑ The total PC savings for 2009 Weather year with the consideration of transmission outages is 37.4 \$M. Compared with the 37.3 \$M PC savings without the consideration of transmission outages, the additional PC savings due to outages is 0.1 \$M.
- ❑ Adding the additional PC savings to the three-weather-year average PC savings for Option A will bring the total PC savings to 35.4 \$M with the benefit/cost ratio of 14.3%.
- ❑ Detailed methodology for transmission outage probability analysis can be found through the following link:
http://www.ercot.com/content/wcm/key_documents_lists/108892/Whitepaper_EconomicPlanning.pdf

Conclusion

- ❑ Based on the study, Option A, which is the Sharyland's preferred option to improve the Panhandle Export capability, does not meet ERCOT Economic Planning criteria.

- ❑ Factors not included in this RPG review
 - ❑ Impact of recent Notice of Suspension (NSO's) of Generation Resource(s) submitted in Sept. & Oct., 2017.
 - ❑ Revised cost estimate provided by Sharyland for Option A (on Nov. 10, 2017).

Questions?