2023 RTP Economic Study: Preliminary Results on Interface Related Projects

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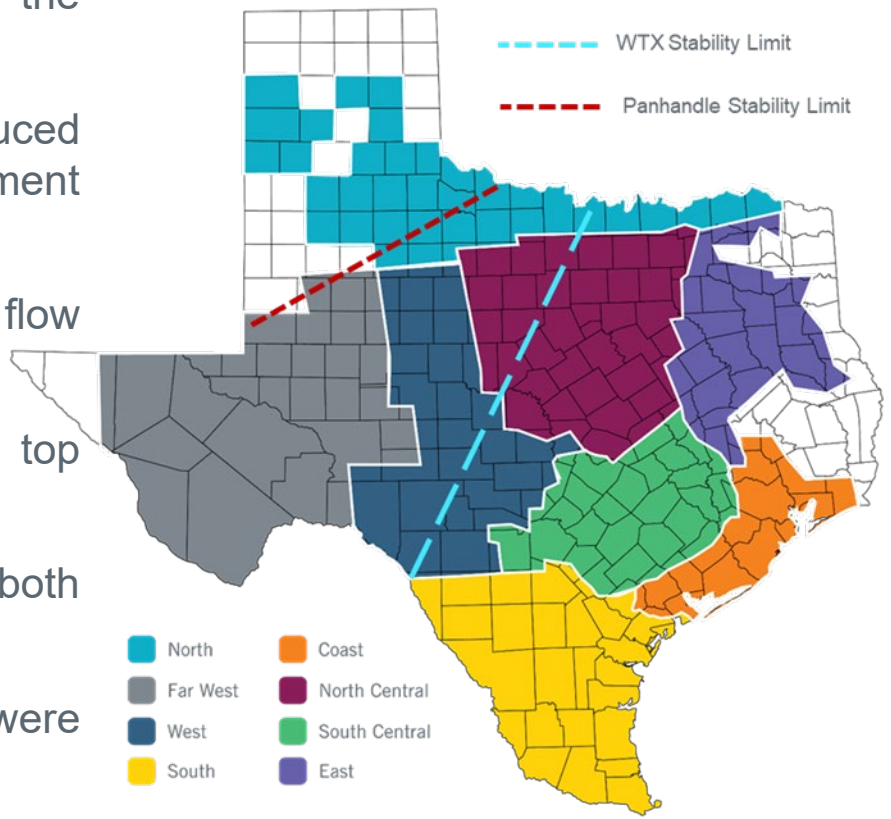
Summary

- ERCOT created the 2023 RTP economic cases (2025 and 2028) and evaluated economics of 23 transmission projects using both the **production cost savings** test and the **generator revenue reduction** test
- This presentation is focused on the findings of 8 transmission projects improving the West Texas (WTX) export and/or Panhandle stability limits
- The rest of the findings will be presented in a future RPG meeting
- ERCOT will continue to evaluate the economic performance of transmission projects in the 2024 RTP economic study

Preamble

- West Texas (WTX) export stability limit in the base case is measured as the sum of the flow on the existing sixteen 345-kV circuits
- Texas Panhandle stability limit was reintroduced based on the recent Quarterly Stability Assessment (QSA) findings
- Panhandle limit is measured as the sum of the flow on the existing eight 345-kV circuits
- Both interfaces are projected to be among the top constraints in 2025 and 2028
- Eight projects were tested to improve one or both constraints
- Simulations on these proposed projects were performed for the 2028 study year
- Cost estimates in the projects are based on past data received from TSPs



For illustrative purposes

Projects Summary

Index	Project	WTX Limit (MW)*	Panhandle Limit (MW)*
	Base Case	11,016	3,487.5
Project 1	4AC lines proposed by Long-Term West Texas Export Study Report (LTWTX) plus two 345 kV additional lines**	14,940	3,877
Project 2	3 AC +Tesla – King 1500 MW HVDC proposed by LTWTX plus two 345 kV additional lines**	15,354	NA***
Project 3	White River – Long Draw and Black Water - Dermott DCKT 345 kV	11,016	NA
Project 4	Tesla-Graham-Royse, DCKT 345 kV	11,799	4,050
Project 5	Tesla – King 1500 MW HVDC	12,411	NA
Project 6	Brown to Bell County East Switch, DCKT 345 kV	11,970	3,487.5
Project 7	Tesla – Marion 1500 MW HVDC	12,411	NA
Project 8	Tesla – WAP 1500 MW HVDC	12,411	NA

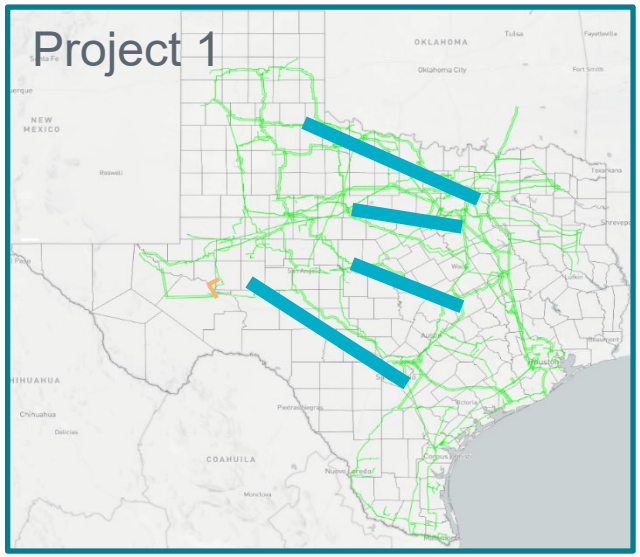
* These limits are 90% of stability limits. Consistent with the ERCOT Transmission and Security Operating Procedure found at http://www.ercot.com/mktrules/guides/procedures.

**Upgrade of Nevill Road Switch to North McCamey and Bakersfield.

*** Based on generation included in the 2023 economic cases.

Project 1: WTX Export Option 1+ Additional Upgrades

- Generation revenue is increased by **~$171M** in study year 2028
- Although the project results in **~$40M** production cost saving in 2028, the benefit to cost ratio is less than the first-year revenue requirement due to large estimated capital cost ($2,762M)

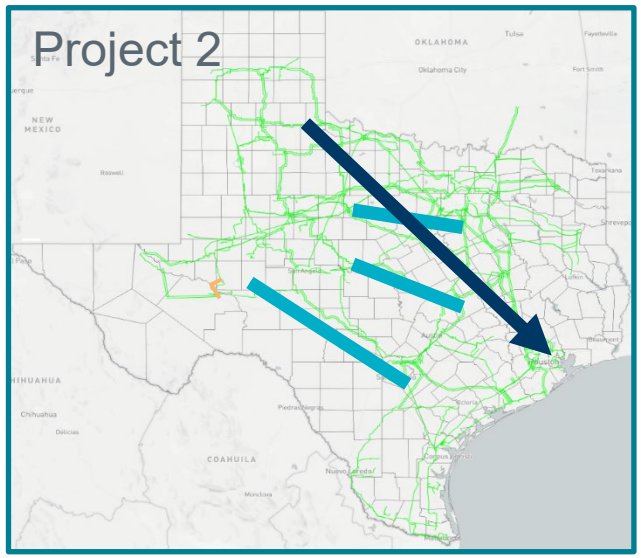


AC lines proposed as a part of LTWTX study

Nevill Road Switch to North McCamey and Bakersfield

Project 2: WTX Export Option 2+ Additional Upgrades

- Generation revenue is increased by **~$327M** in study year 2028
- Although the project results in **~$46M** production cost saving in 2028, the benefit to cost ratio is less than the first-year revenue requirement due to large estimated capital cost ($5,227M)



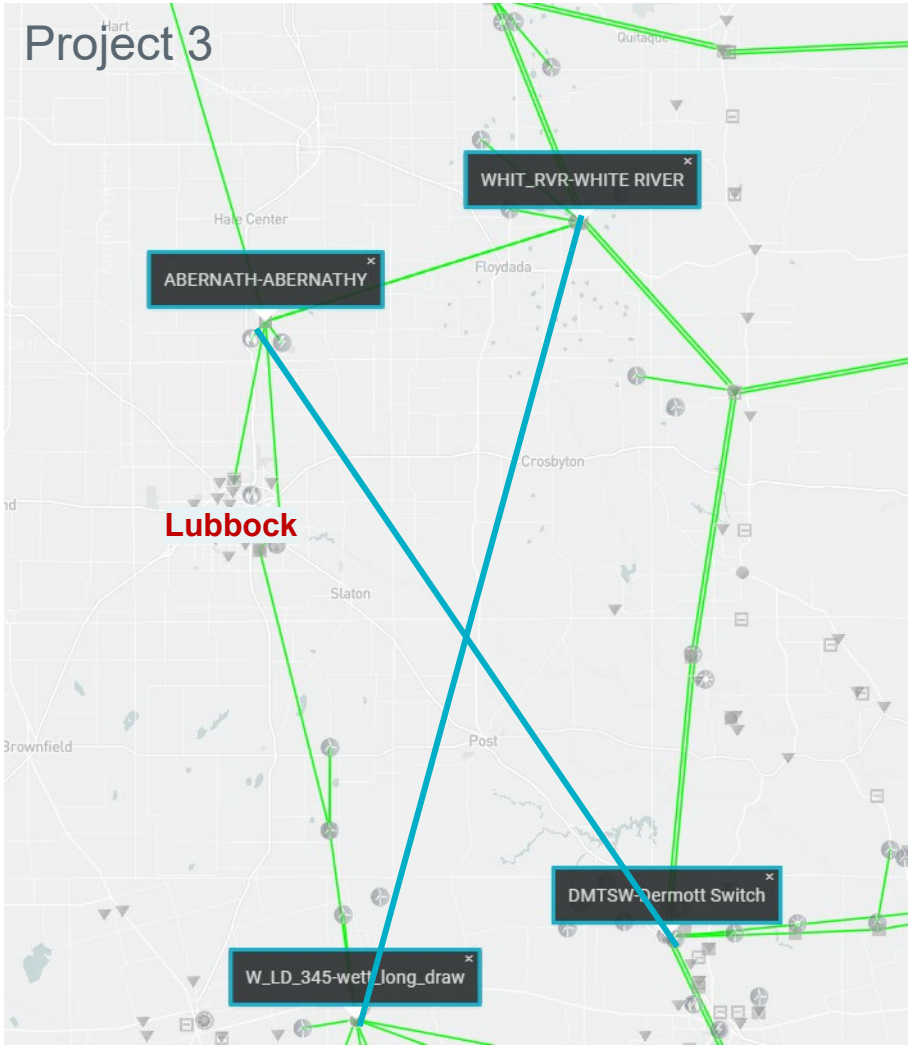
AC lines proposed as a part of LTWTX study

Nevill Road Switch to North McCamey and Bakersfield

HVDC lines proposed as a part of LTWTX study

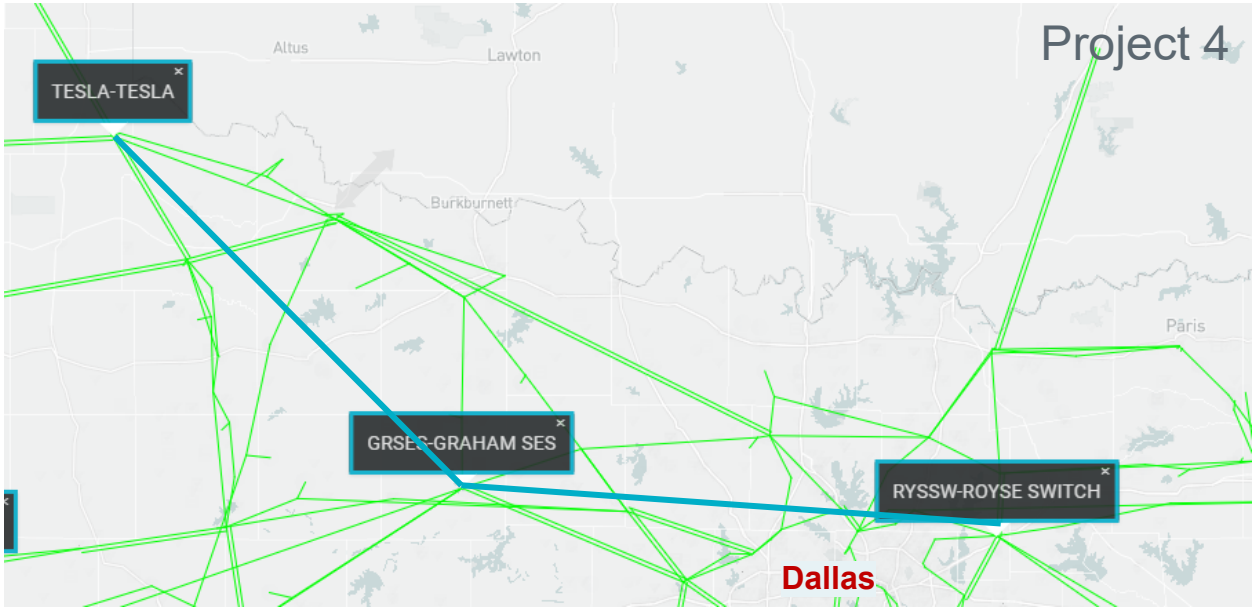
Project 3: White River – Long Draw and Black Water – Dermott, DCKT 345 kV

- This project is primarily proposed to resolve Panhandle interface
- Generation revenue is increased by **~$77M** in study year 2028
- The project results in **~$13M** production cost saving in 2028
- The benefit to cost ratio is less than the first-year revenue requirement



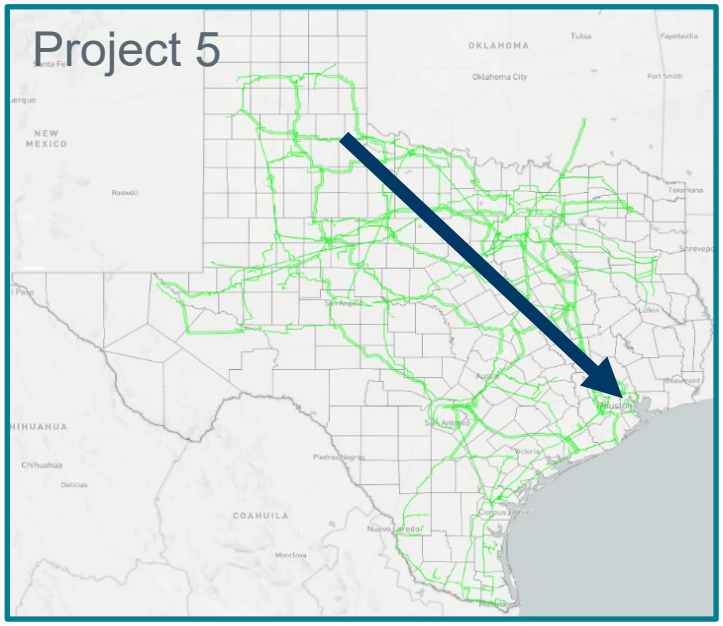
Project 4: Tesla-Graham-Royse, DCKT 345 kV

- This project is proposed to increase both Panhandle and WTX export interface limit
- Generation revenue is increased by **~$93M** in study year 2028
- The project results in **~$17M** production cost saving in 2028
- The benefit to cost ratio is less than the first-year revenue requirement



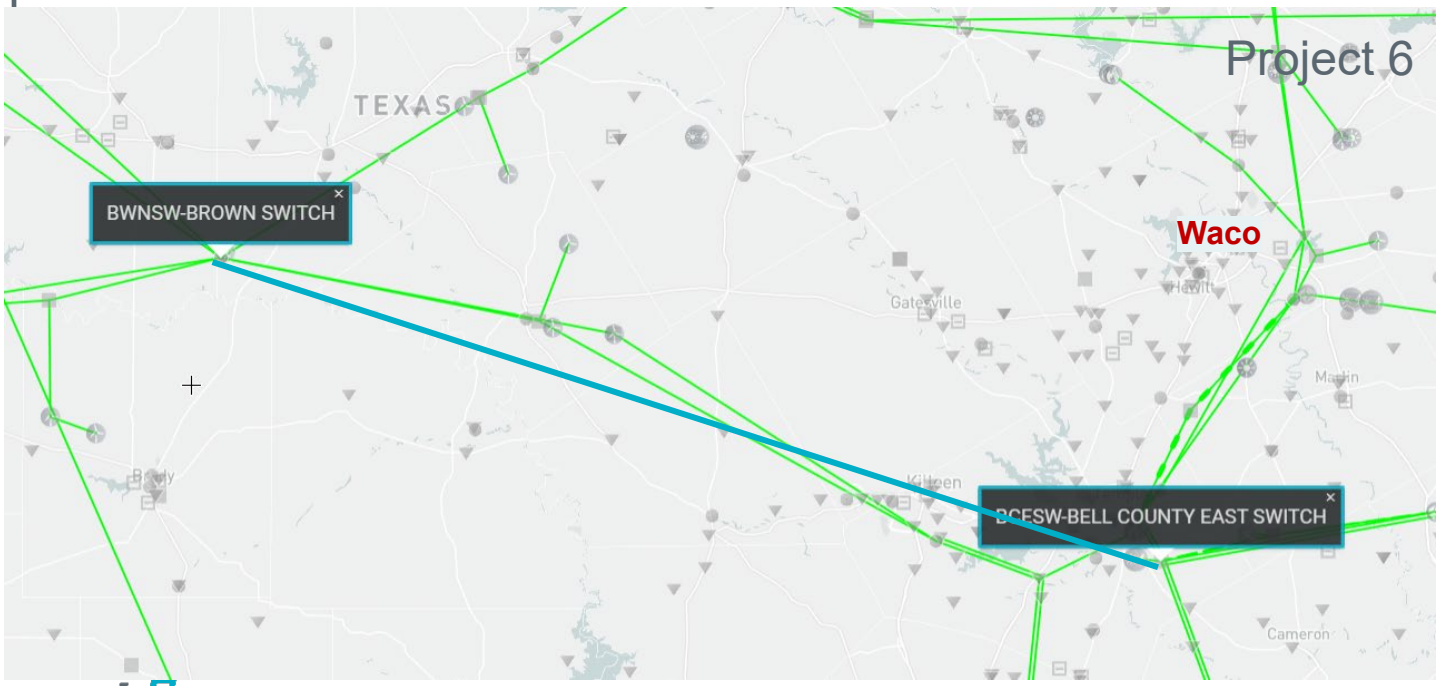
Project 5: Tesla – King 1500 MW HVDC

- This project uses the HVDC portion of Project 2 without AC lines
- Generation revenue is increased by **$255M** in study year 2028
- The project results in **~$41M** production cost saving in 2028
- The benefit to cost ratio is less than the first-year revenue requirement due to large estimated capital cost ($3,012M)



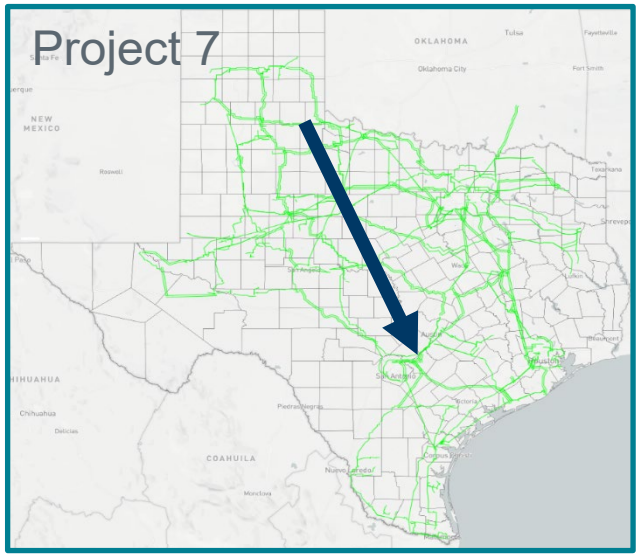
Project 6: Brown to Bell County East Switch, DCKT 345 kV

- This project is primarily proposed to improve WTX export interface constraint
- Generation revenue is increased by **~$63M** in study year 2028
- The project results in **~$9M** production cost saving in 2028
- The benefit to cost ratio is less than the first-year revenue requirement



Project 7: Tesla – Marion 1500 MW HVDC

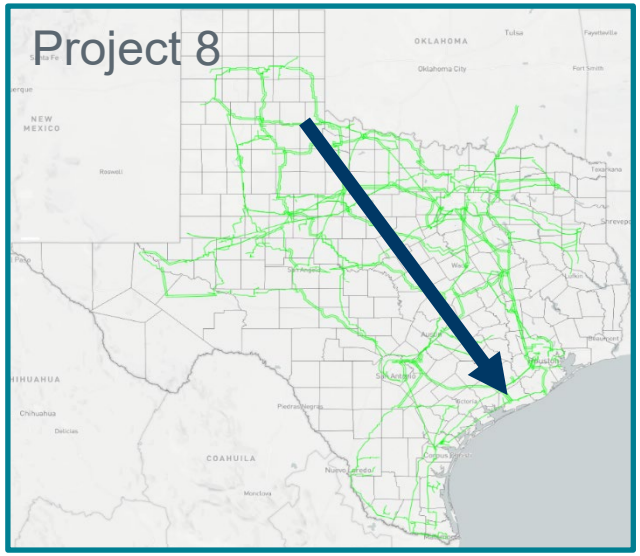
- This project is motivated by recent and projected congestions in Central Texas
- Generation revenue is increased by **$136M** in study year 2028
- Although the project results in **~$21M** production cost saving in 2028, the benefit to cost ratio is less than the first-year revenue requirement due to large estimated capital cost **($2,667M)**



Project 8: Tesla – WA Parish 1500 MW HVDC

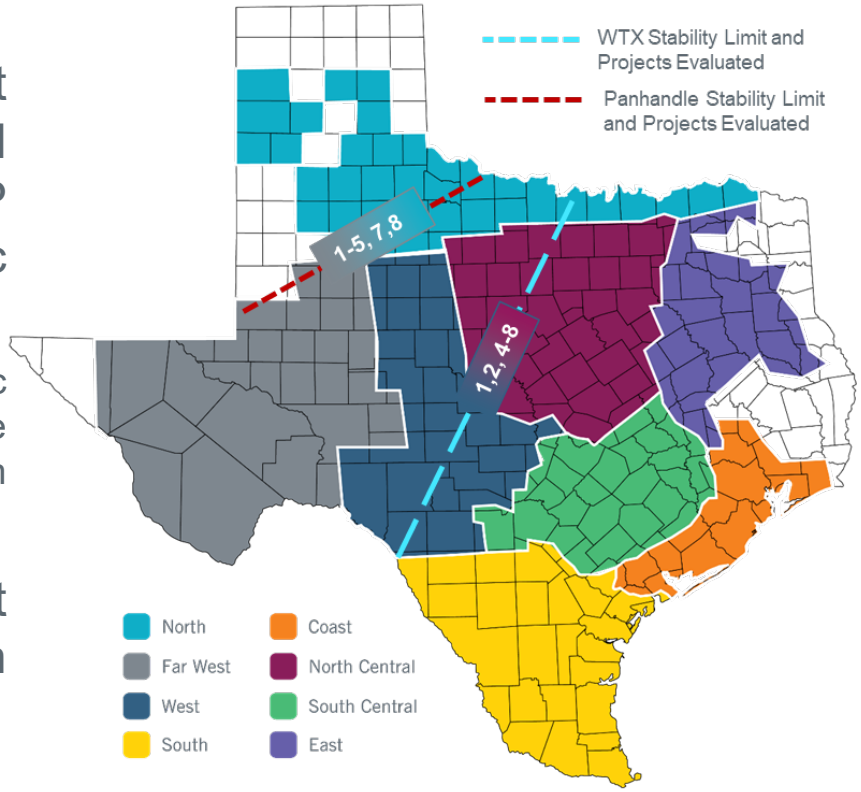
- This project
  - Increases WTX limit
  - Resolves Panhandle limit
  - Relieves heavy congestion in southwest of the Coast region
- Generation revenue is increased by **~$186M** in study year 2028

- Although the project results in **~$37M** production cost saving in 2028, the benefit to cost ratio is less than the first-year revenue requirement due to large estimated capital cost ($3,141M)



Next Steps

- ERCOT is finalizing the cost benefit analysis of 15 other non interface related transmission projects for 2023 RTP economic study based on the generic cost estimation
  - Per the RPG review process, the economic performance of these projects should be evaluated using the capital cost estimates from TSPs
- ERCOT will post the 2023 RTP report summarizing the study results later in December 2023



- ERCOT will continue to evaluate the economic performance of the transmission projects in the 2024 RTP economic study and 2024 LTSA, using both production cost savings test and generator revenue reduction test, until the congestion cost savings test is adopted

Questions

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