WETT Bearkat Area Transmission Improvements Project-ERCOT Independent Review Update

ERCOT Transmission Planning

Regional Planning Group
April 24, 2018

Overview

Wind Energy Transmission Texas (WETT) submitted Bearkat Area Transmission Improvements project for Regional Planning Group review. This is a Tier 1 project that is estimated to cost $ 69.87 million.

http://www.ercot.com/calendar/2017/10/19/108887-RPG

- Proposed for 2021
- Address generator interconnection issues in Bearkat Area
- Reliability Issues
  - Voltage Instability
  - Thermal Overloads
- Provide exit strategy for WETT proposed Remedial Action Scheme (RAS)
- Improve generator get-a-way capacity at Bearkat
- Economic Benefit

Study Assumptions

PC Study Case

http://www.ercot.com/calendar/2018/2/27/138675-RPG

- Constructed from 17 RTP 2023 PC Model
- ERCOT system-wide production-cost simulation was run for the study year
- All new generator additions that met Planning Guide Section 6.9 criteria at time of study were added to the case.
- Transmission Projects expected to be in-service within the study region by 2022 at the time of the study were added to the case
- Monthly gas prices based on the 2018 HOG Forecast (2018 EIA AEO NG Forecast) were used

Study Procedure

- **Scenarios evaluated:**
  1) Study Cases
  2) Economic Assessment of Alternatives
  3) Sensitivities based on PG Section 3.1.3(4):
     - Generator additions with Signed Generation Interconnection Agreements (SGIA) but that DO NOT meet Planning Guide Section 6.9 criteria in study region at time of study will be added to the case

Stability Interface limits

- The stability limit associated with generation at Bearkat following loss of Sand Bluff to Bearkat is higher than the thermal limit

- No stability interface limit was used in the economic analysis other than the thermal limits associated with 345-kV and 138-kV lines

Economic Evaluation of Alternatives (No stability interface limits applied)

Please refer to the Appendix for project option descriptions

Projects	Annual PC Savings (M$)	Total Capital Cost for Option (M$)	Benefit/Cost Ratio	Meets Benefit/Cost Ratio of 15%
Opt 1	5.76	54.95	0.11	NO
Opt 2	8.12	55.61	0.14	NO
Opt 3	7.82	58.06	0.14	NO
Opt 4	8.13	69.87	0.12	NO
Opt 5	7.74	80.54	0.10	NO
Opt 6	7.12	93.47	0.08	NO
Opt 7	4.93	102.15	0.05	NO
Opt 8	6.43	106.50	0.06	NO

Economic Evaluation of Alternatives
Weather Scenario Analysis

For options with B/C ratio between 10 and 20%, PC savings were determined under two other weather scenarios (2007 and 2010)

http://www.ercot.com/content/wcm/key_documents_lists/108892/Whitepaper_Economic_Planning.pdf

Projects	PC Savings - 2007 Weather Year (M$)	PC Savings - 2010 Weather Year (M$)	Total Capital Cost for Option (M$)	Benefit/Cost Ratio - 2007 Weather Year	Benefit/Cost Ratio - 2010 Weather Year	Benefit/Cost Ratio using Weather-Averaged Savings	Meets Benefit/ Cost Ratio of 15%
Opt 1	6.99	6.32	54.95	0.13	0.12	0.12	NO
Opt 2	7.50	6.93	55.61	0.14	0.13	0.14	NO
Opt 3	7.18	5.75	58.06	0.12	0.10	0.12	NO
Opt 4	7.27	6.07	69.87	0.10	0.09	0.10	NO

Transmission Outage Probability Analysis

- Transmission outage probability analysis will be performed consistent with 2017 RTP, 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

- Transmission outage probability analysis will be performed for Options 1, 2, 3, and 4

- The additional production cost (PC) savings under outages, if any, will be determined using base weather year 2009

Deliverables

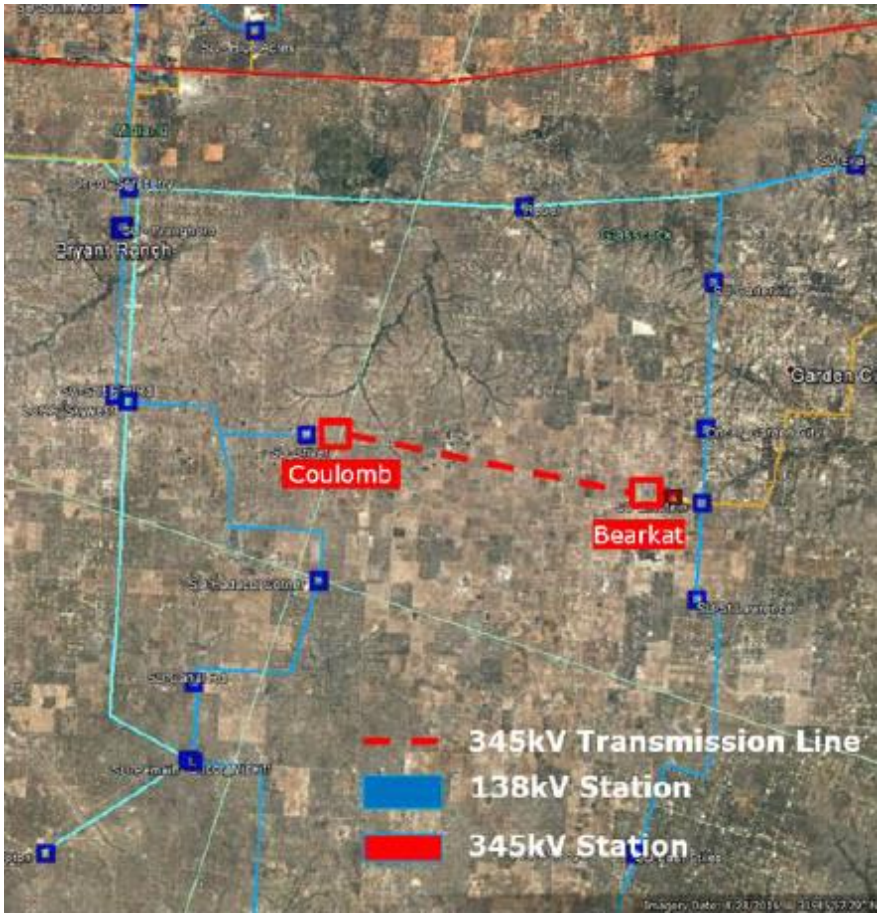
❑ Tentative Timeline

- Final EIR update to RPG – May 2018
- EIR recommendation to TAC – May 2018
- BOD Endorsement – June 2018

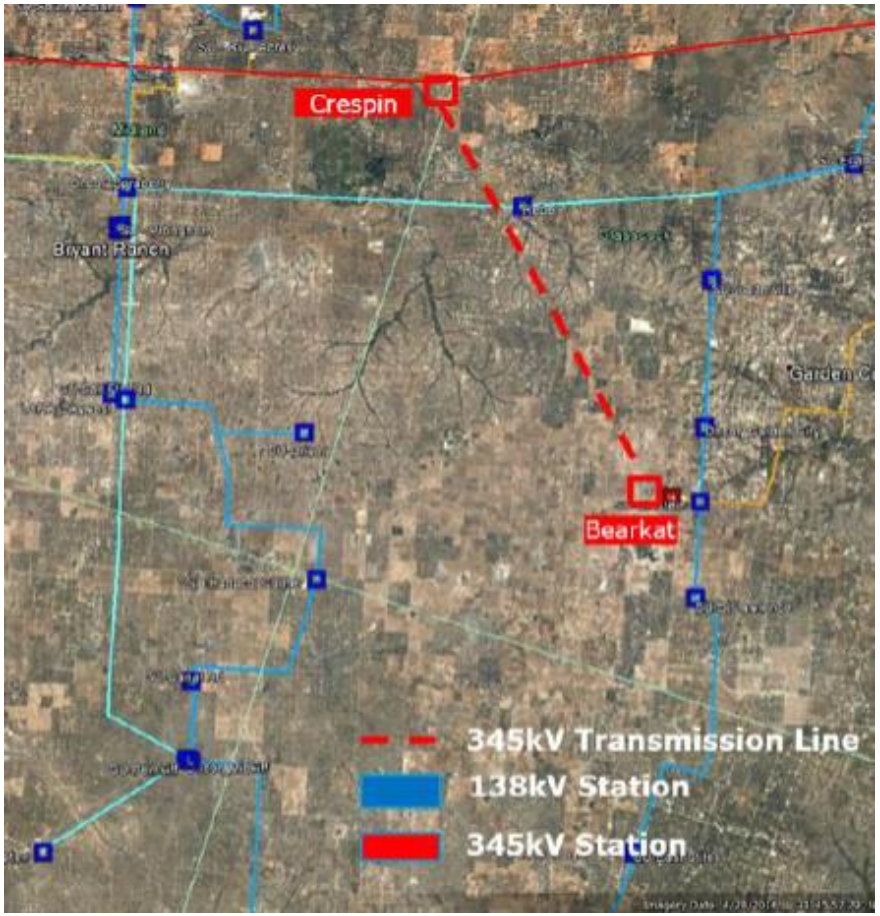
Stakeholder Comments Also Welcomed to Prabhu Gnanam:

ggnanam@ercot.com

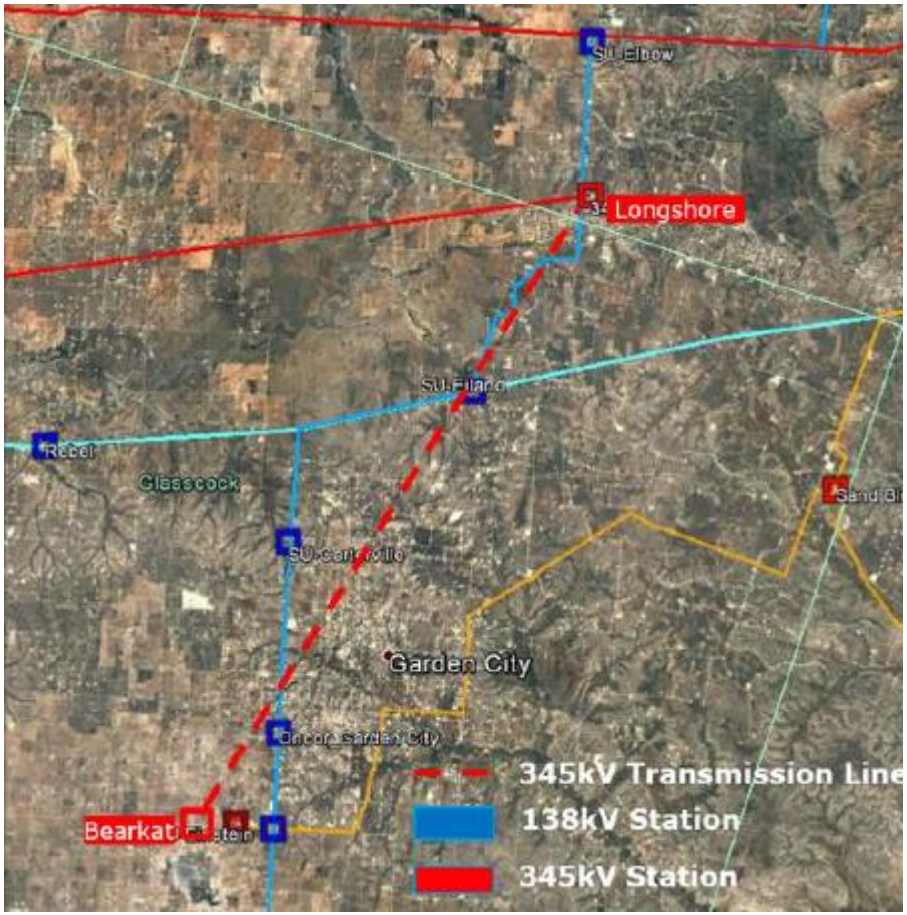
Appendix – Transmission Option 1 (Presented by WETT at 08/22/2017 RPG)



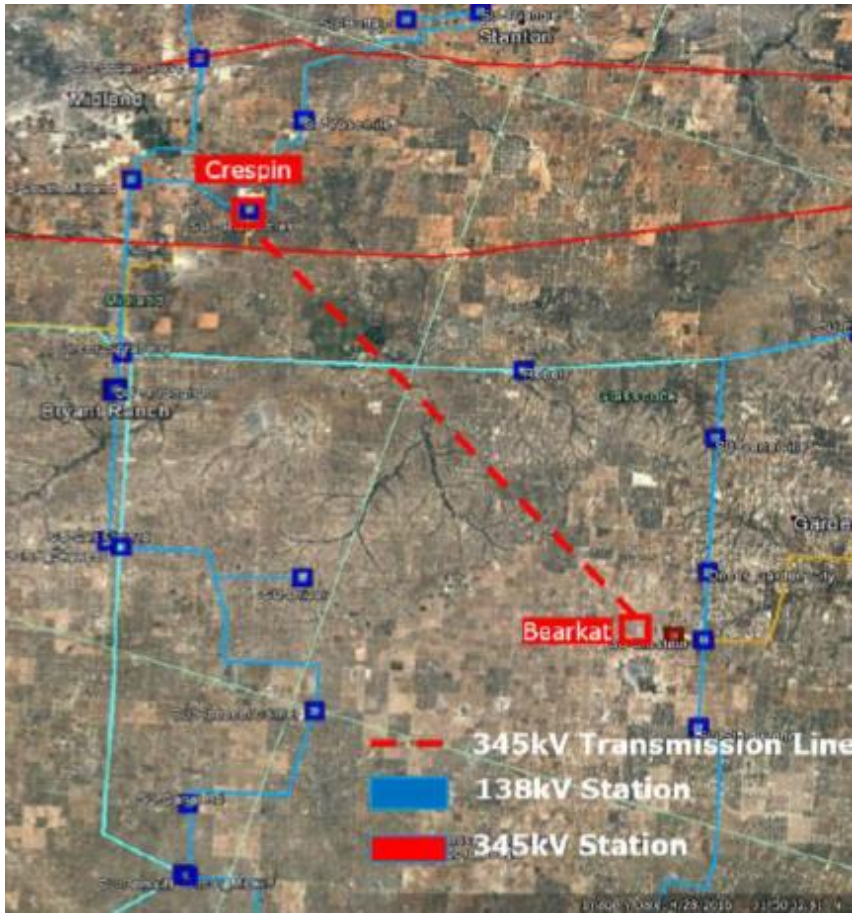
Appendix – Transmission Option 2 (Presented by WETT at 08/22/2017 RPG)



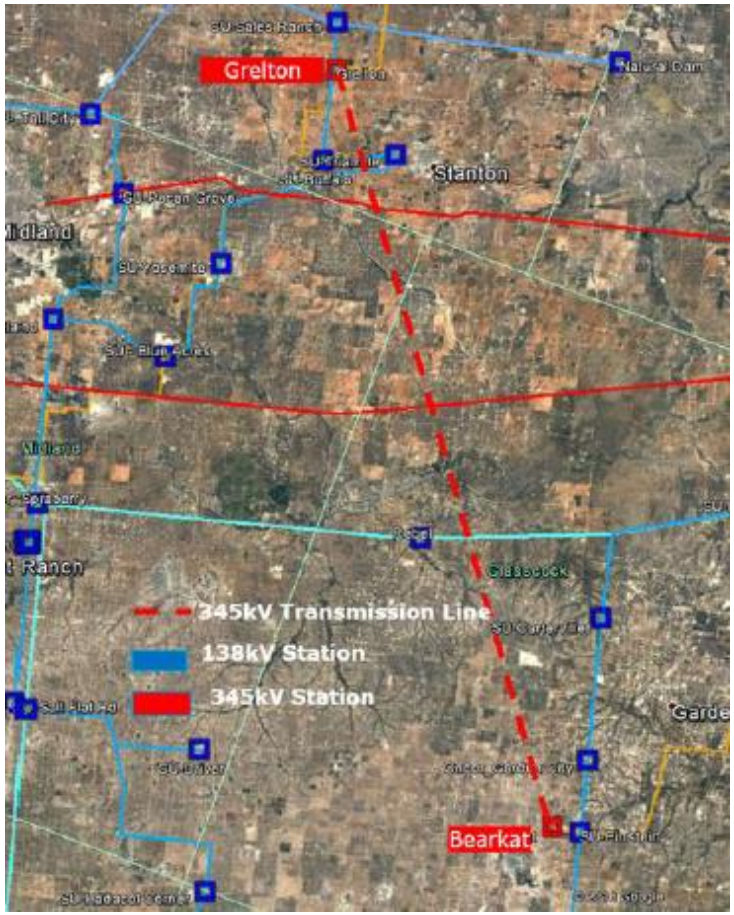
Appendix – Transmission Option 3 (Presented by WETT at 08/22/2017 RPG)



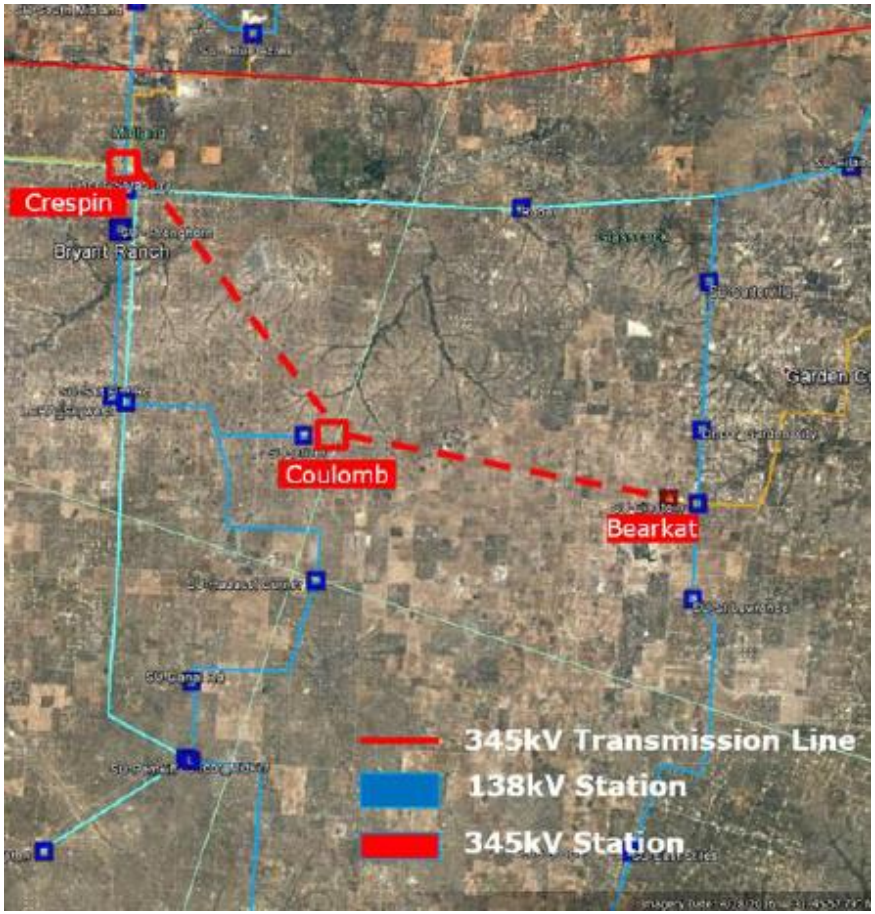
Appendix – Transmission Option 4 (Presented by WETT at 08/22/2017 RPG)



Appendix – Transmission Option 5 (Presented by WETT at 08/22/2017 RPG)



Appendix – Transmission Option 6 (Presented by WETT at 08/22/2017 RPG)



Appendix – Transmission Option 7 (Presented by WETT at 08/22/2017 RPG)

Appendix – Transmission Option 8 (Presented by WETT at 08/22/2017 RPG)