

# Bakersfield to Big Hill 345-kV Second Circuit Addition

RPG Discussion

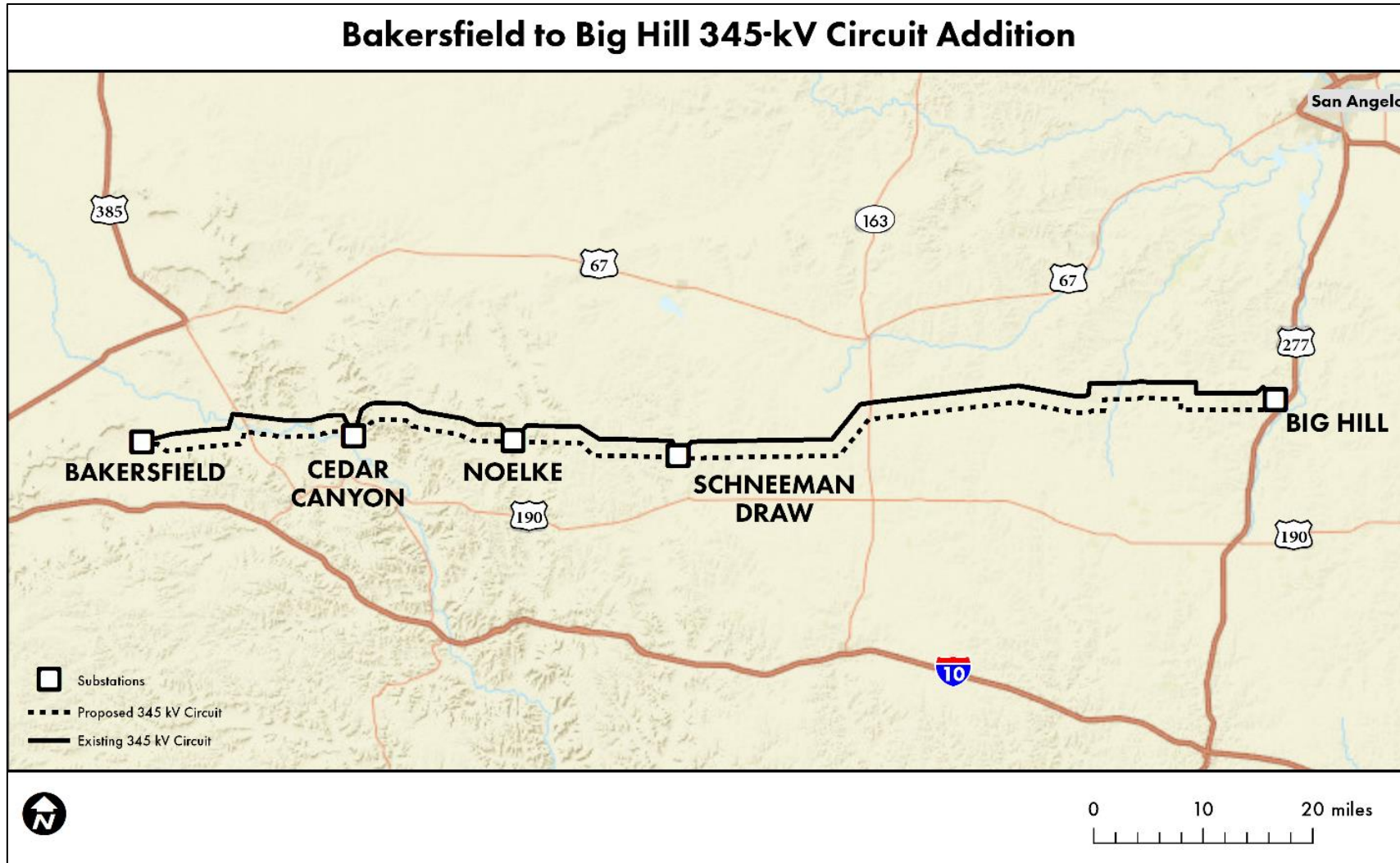
April 6, 2021



# Introduction

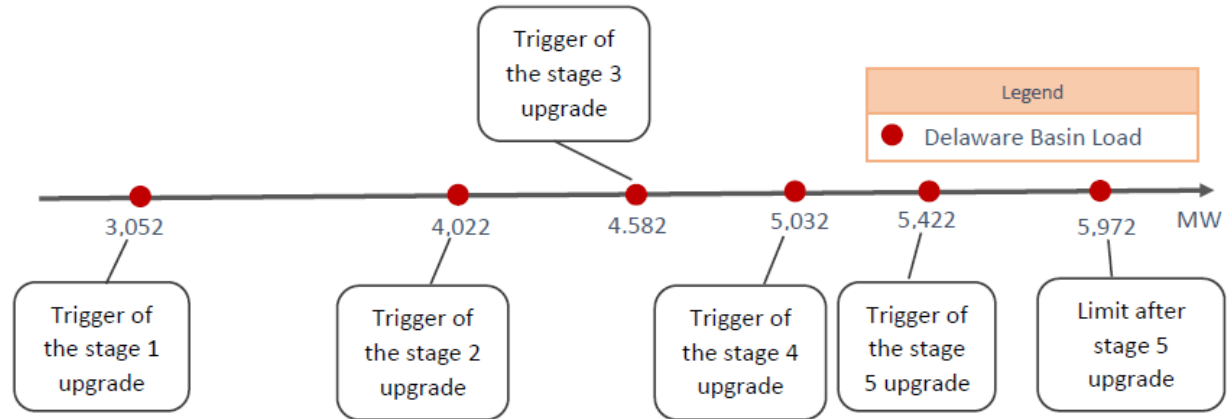
- STEC and LCRA TSC jointly present a Tier 2 RPG project to add a second circuit between Bakersfield and Big Hill 345-kV substations
- The project is the “Stage 1 upgrade” identified in ERCOT’s Delaware Basin Load Integration Study
- Proposed project scope:
  - Add 112 miles of new 2-1590 ACSR conductor that matches existing circuit’s capacity
  - Upgrade Bakersfield, Big Hill, Cedar Canyon, Noelke, and Schneeman Draw substations to cut-in the new circuit.
- Proposed in-service date: Summer 2023

# Project Map



# Evaluation of System Needs

- Implement the improvements identified in the road map for transmission improvements in the Delaware Basin Load Integration study
- Stage 1 upgrades trigger at 3,052 MW load level



Stage	Estimated Delaware Basin Load Level (MW)	Upgrade Element
1	3,052	Add a second circuit on the existing Big Hill – Bakersfield 345-kV line
2	4,022	A new Bearkat – North McCamey – Sand Lake double circuit 345-kV line
3	4,582	A new Riverton – Owl Hills single circuit 345-kV line
4	5,032	Riverton – Sand Lake 138-kV to 345-kV conversion and a new Riverton – Sand Lake 138-kV line
5	5,422	A new Faraday – Lamesa – Clearfork – Riverton double circuit 345-kV line

# Load Analysis

- Stage 1 load level (3,052 MW) is surpassed in summer of 2023 in the 2020 U1 SSWG Cases
- TDSPs in the region confirmed load levels on the Delaware Basin busses

Year	MW	MVAR
2022	2915	898
<b>2023</b>	<b>3064</b>	<b>939</b>
2024	3123	956
2024 min	2073	665
2024 HWLL	1906	623

# Analyses

- Stability Analysis:
  - SUM2022 and HWLL2023 Dynamics Working Group (DWG) flat start cases published in April of 2020
  - Contingencies that are a part of McCamey and West Texas Export Generic Transmission Constraints were analyzed
  - The second 345-kV circuit addition is not expected to significantly impact or worsen the system stability in this portion of the system.
- Short circuit Analysis:
  - ERCOT SPWG future 2023 short circuit case
  - The maximum fault duty with the second circuit added is 17 kA (within existing ratings at substations in the region)

# Analyses

- Subsynchronous Resonance (SSR) Analysis:
  - Based on an initial frequency scan performed by ERCOT and the history of the area, it was determined that a detailed SSR study is required for the RPG project.
  - STEC will perform a detailed SSR study and the study results will be submitted to ERCOT as soon as they are available.
  - Scoping and kickoff meeting held on February 11, 2021

# Project Scope

- STEC will:
  - Add roughly 112 miles of new 2-1590 ACSR conductor with a minimum rating of 1,606 MVA.
  - The summer normal and emergency ratings of the new second circuit will be the same as the existing circuit.
  - Lines will be added on existing right-of-way between Bakersfield and Big Hill substations.
  - Obtain CCN to add second circuit.
  - STEC's cost estimate is \$49.5M\*.
- LCRA TSC will:
  - Upgrade Bakersfield, Big Hill substations, Cedar Canyon, Noelke and Schneeman Draw substations to accommodate the second circuit addition.
  - All substation equipment will have a minimum rating of 4,000 A and 63 kAIC.
  - LCRA TSC's cost estimate for the substation work in five substations is \$33.7M\*.
- Total project cost: \$83.2M\*

*\*Latest available estimate prior to final issued design, and subject to revision as additional factors may be identified.*





# Questions?

## Project contacts

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