South Texas Electric Cooperative (STEC) – Hondo Creek to Pearson 69-kV Transmission Line Rebuild Project ERCOT Independent Review Status Update

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RPG Meeting
October 19, 2022

Recap

- STEC submitted the Hondo Creek to Pearson 69-kV Transmission Line Rebuild Project for Regional Planning Group (RPG) review in August 2022. This is a Tier 2 project that is estimated to cost $37.5 million
  - Proposed for May 2024
  - Addresses
    - Reliability need along the Hondo Creek – Castroville Switch – Pearson 69-kV line
    - STEC's Planning criteria violation
    - Aging transmission infrastructure
- ERCOT provided study scope for the Hondo Creek to Pearson 69-kV Transmission Line Rebuild Project during September RPG meeting
  - https://www.ercot.com/files/docs/2022/09/15/EIR%20-%20STEC%20Hondo%20Creek%20to%20Pearson%2069-kV%20Transmission%20Line%20Rebuild%20Project%20Scope_Sept2022.pdf

Analysis Performed

- Need Analysis
  - The reliability analysis was performed to identify the need to serve the projected area load using the study base case
- Project Evaluation
  - Project alternatives were tested to satisfy the NERC and ERCOT reliability requirements
  - TSP's planning criteria was also considered

Preliminary Results of Reliability Assessment

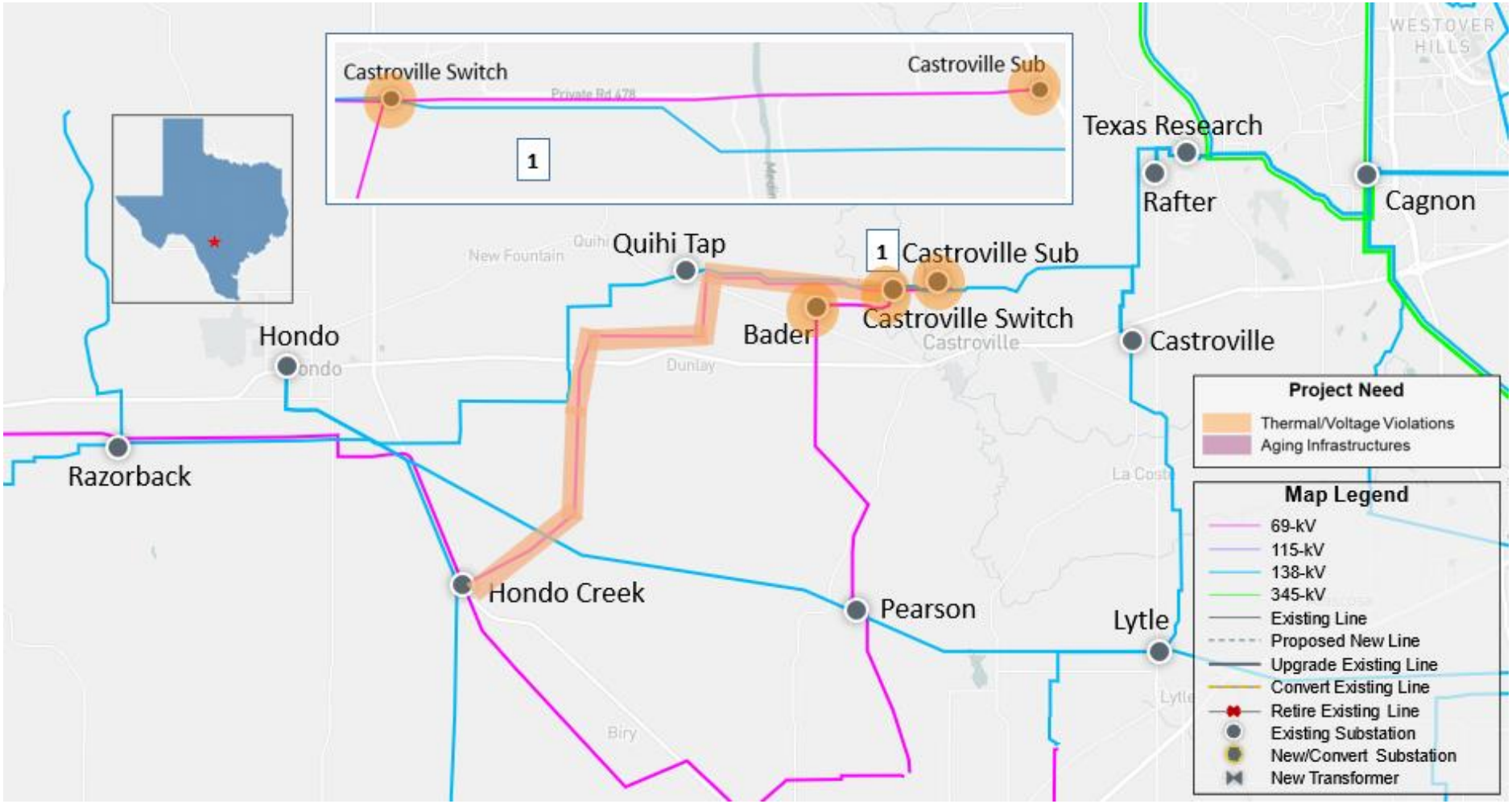
- Thermal Violations

Monitored Element	Contingency	Loading (%)
Hondo Creek – Castroville Switch 69-kV line	Bader – Pearson 69-kV line	107.8

- Bus Voltage Violations

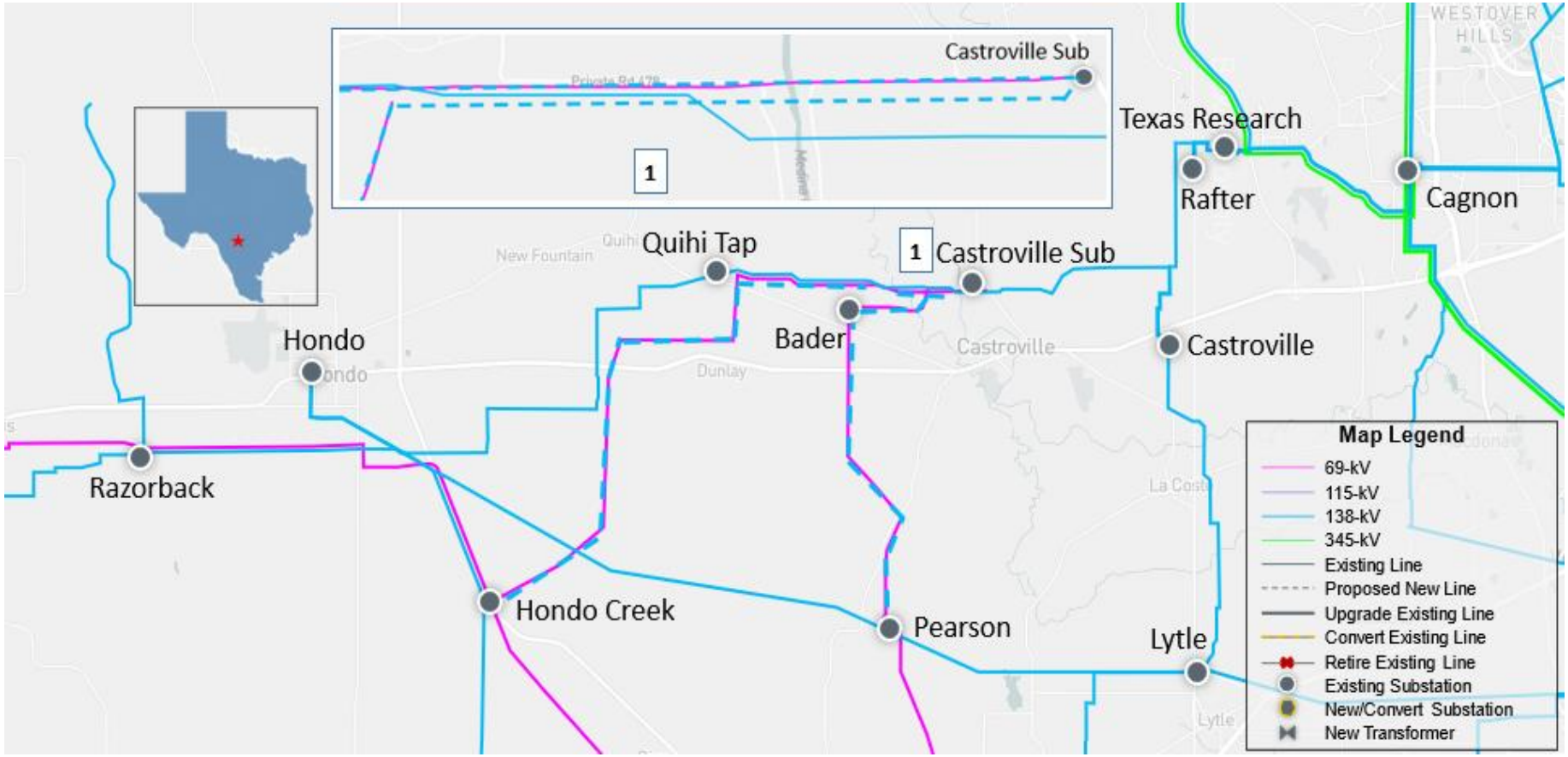
Bus	Contingency	Voltage (pu)
Castroville Sub 69-kV (5808)	Bader – Pearson 69-kV line	0.88
Castroville Switch 69-kV (5807)	Bader – Pearson 69-kV line	0.89
Bader 69-kV (5810)	Bader – Pearson 69-kV line	0.89

Study Area Map with Project Need



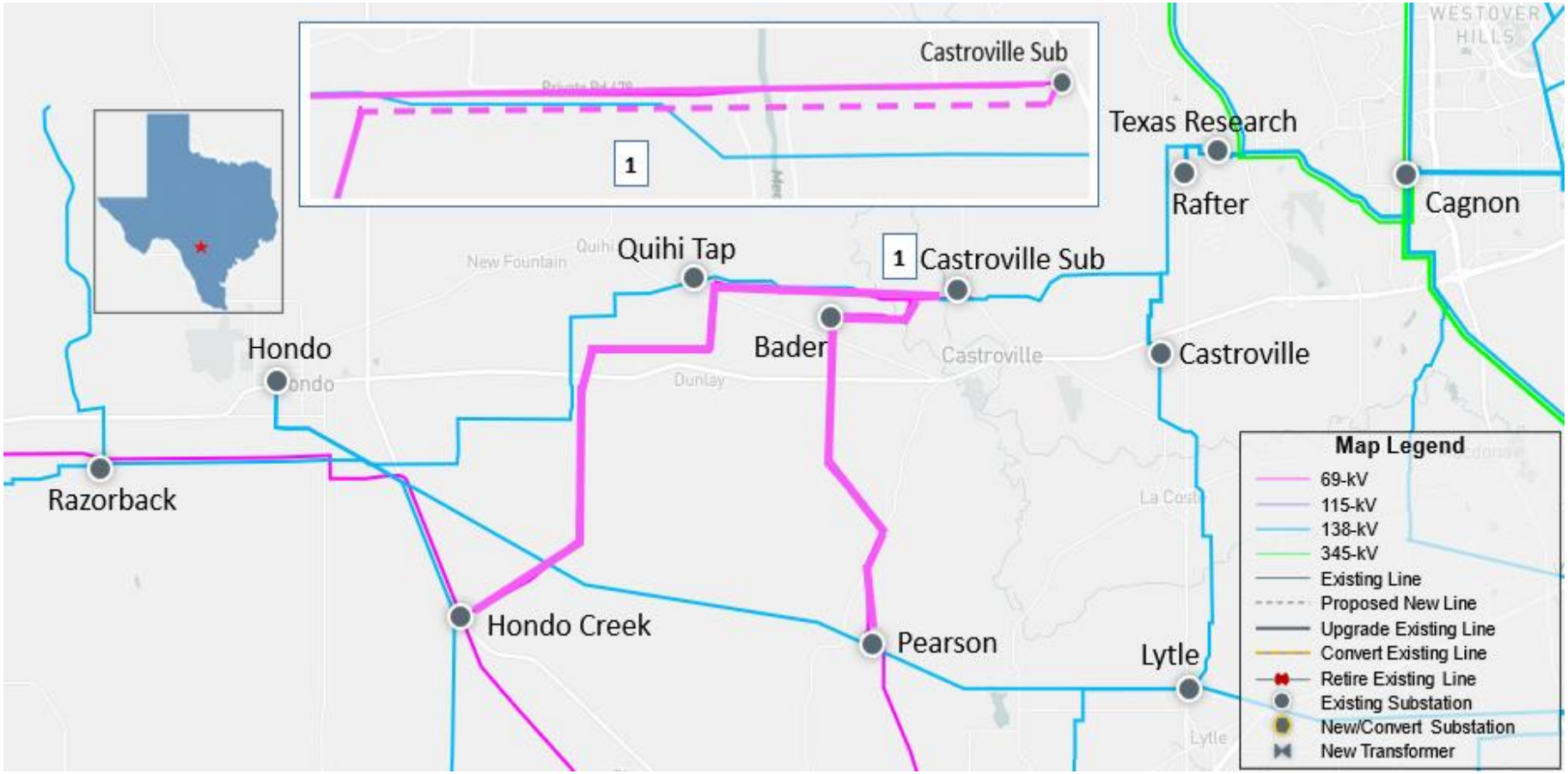
Option 1 – STEC Proposed Solution

- Rebuild the Hondo Creek to Castroville Sub to Bader to Pearson 69-kV line to 138-kV
- Remove the pole mounted switch of Castroville Switch
- The 1.5-mile of 69-kV radial line from the Castroville Switch to Castroville Sub will be upgraded to a double-circuit 138-kV line to form a loop



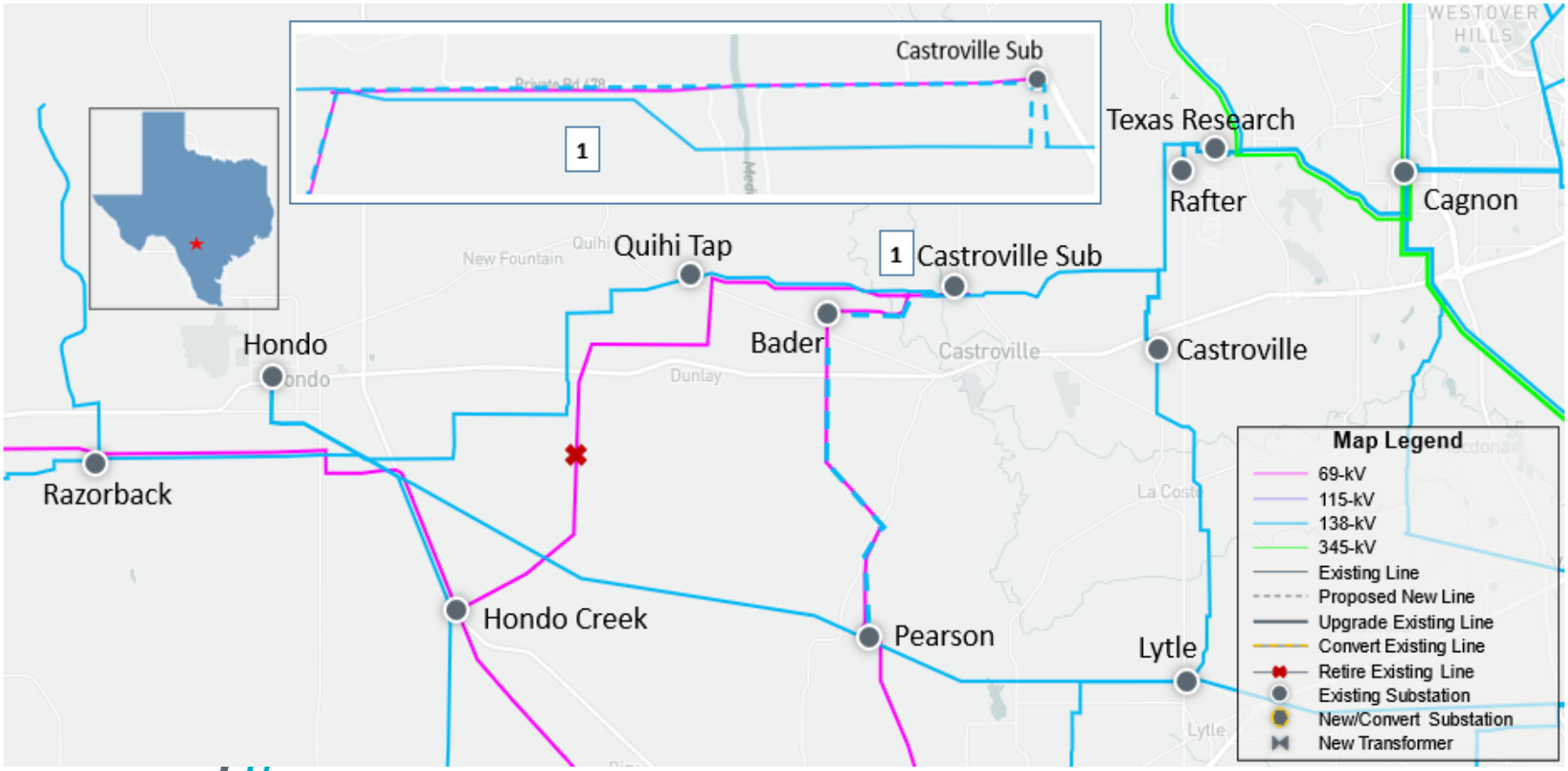
Option 2

- Upgrade the Hondo Creek to Castroville Sub to Bader to Pearson 69-kV line
- Remove the pole mounted switch of Castroville Switch
- The 1.5-mile of 69-kV radial line from the Castroville Switch to Castroville Sub will be upgraded to a double-circuit 69-kV line to form a loop



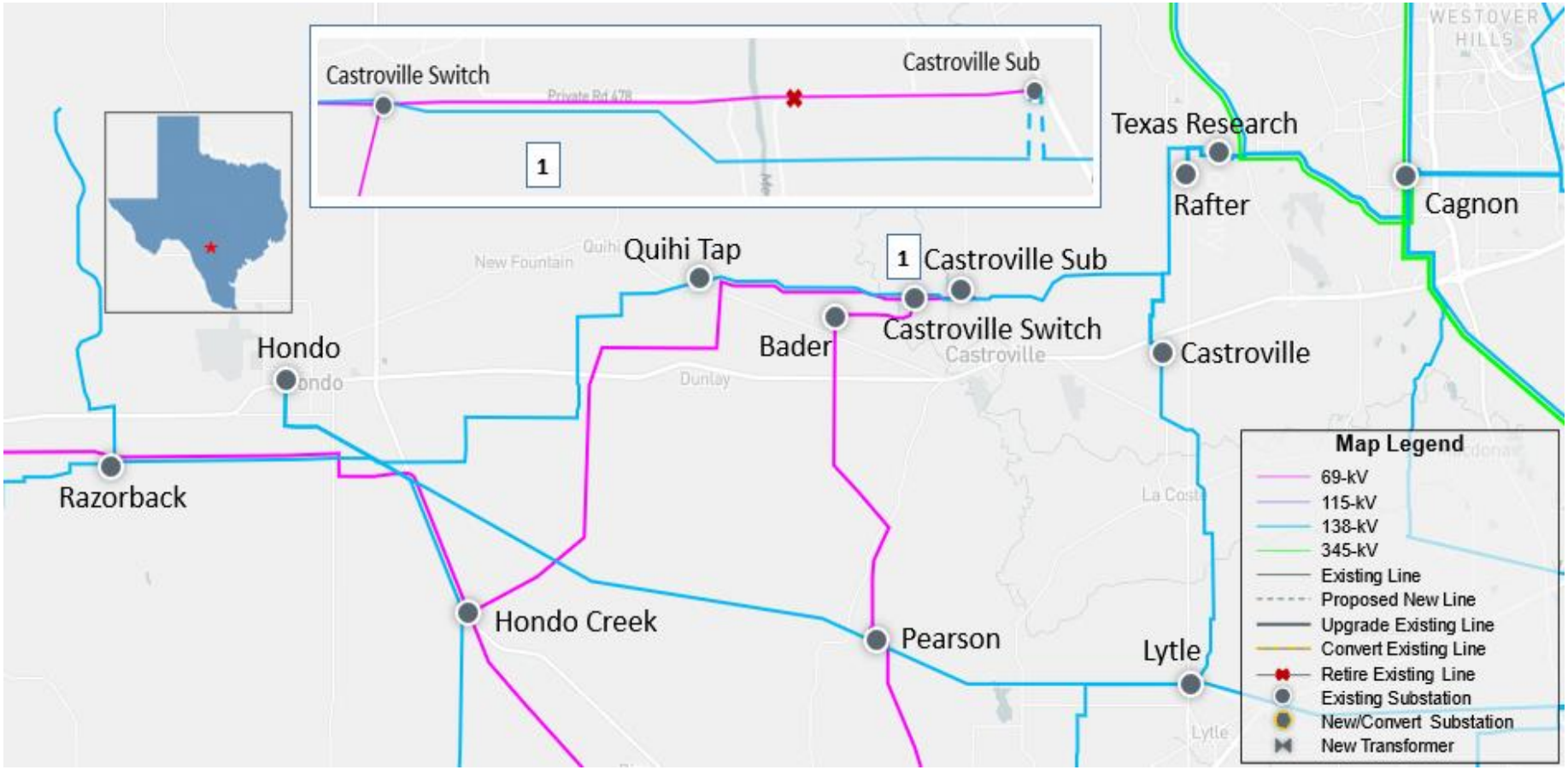
Option 3

- Remove the pole mounted switch of Castroville Switch
- Retire the Hondo Creek to Castroville Switch 69-kV line
- Rebuild the Castroville Sub to Bader to Pearson 69-kV line to 138-kV
- Construct an approximately 0.1-mile loop of the existing Castroville to Quihi Tap 138-kV line into the Castroville Sub



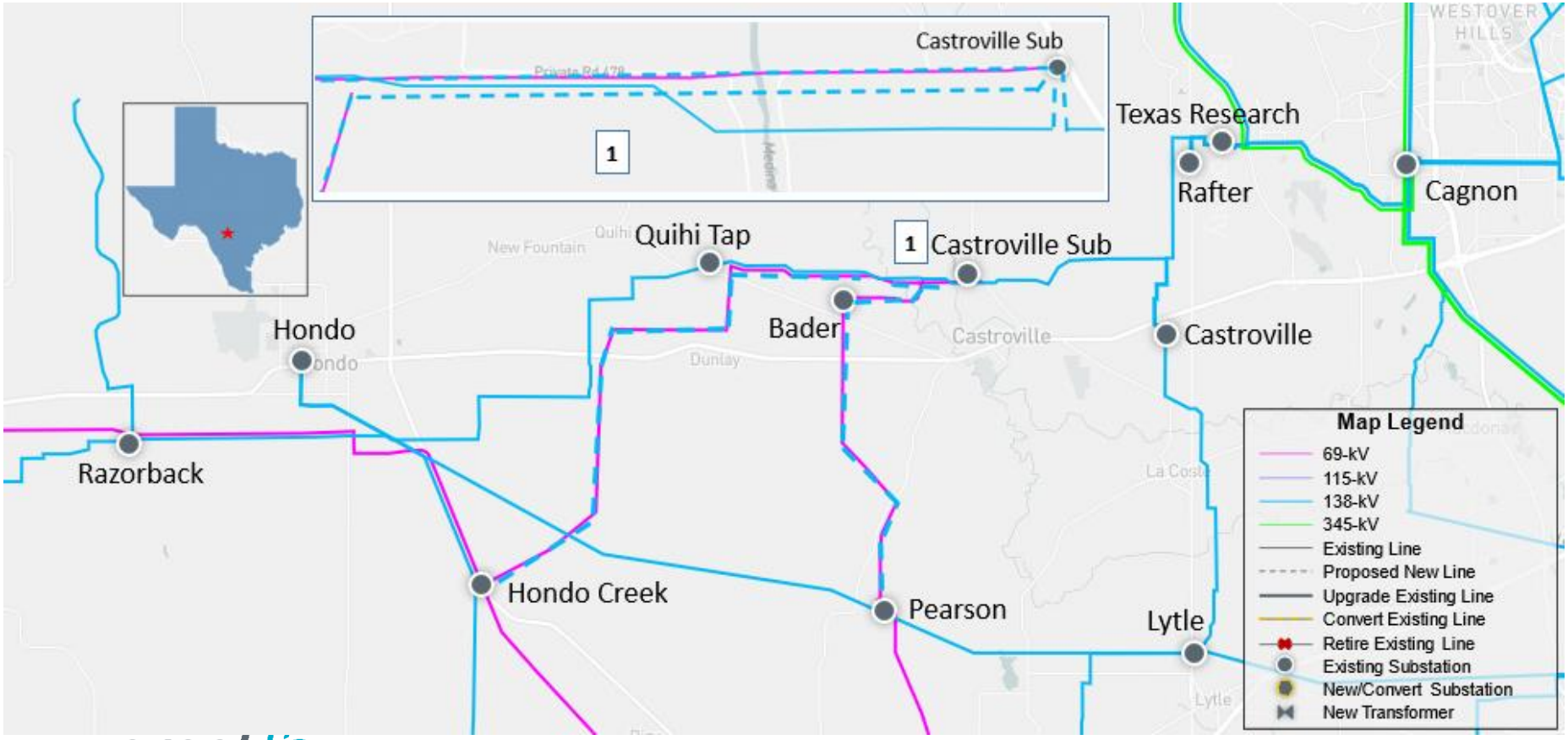
Option 4

- Retire the Castroville Switch to Castroville Sub 69-kV radial line
- Rebuild the Castroville Sub 69-kV substation to 138-kV
- Construct an approximately 0.1-mile loop of the existing Castroville to Quihi Tap 138-kV line into the Castroville Sub



Option 5

- Rebuild the Hondo Creek to Castroville Sub to Bader to Pearson 69-kV line to 138-kV
- Remove the pole mounted switch of Castroville Switch
- The 1.5-mile of 69-kV radial line from the Castroville Switch to Castroville Sub will be upgraded to a double-circuit 138-kV line to form a loop
- Construct an approximately 0.1-mile loop of the existing Castroville to Quihi Tap 138-kV line into the Castroville Sub



Preliminary Results of Reliability Assessment - Study Options

- All five options addressed the reliability violations in the study area
- All five options addressed STEC's planning criteria violation

	N-1		X-1 N-1		G-1 N-1	
	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations
Option 1	None	None	None	None	None	None
Option 2	None	None	None	None	None	None
Option 3	None	None	None	None	None	None
Option 4	None	None	None	None	None	None
Option 5	None	None	None	None	None	None

Preliminary Results of Long-term Load Serving Capability Assessment

- Based on the review of the load in the study area, the loads at Castroville Sub and Quihi substations were increased for the load serving capability assessment
- Long-term load serving capability along the Hondo Creek – Castroville Sub – Pearson area

Option	Load Serving Capability (MW)*	Violation	Contingency Criteria
Option 1	280	Bus Low Voltage	N-1
Option 2	80	Thermal	N-1
Option 3	230	Thermal	N-1
Option 4	50	Bus Low Voltage	G-1+N-1
Option 5	320	Bus Low Voltage	N-1

** Heavy flow on certain small 138/69-kV transformer was observed for all options at a similar load level. It was not considered for the purpose of option comparison*

Options Evaluation and Short-Listed Options

- All five options addressed the reliability violations in the study area
- All five options addressed STEC's planning criteria violation
- All options except for Option 4 address the aging transmission infrastructures of Hondo Creek – Castroville Switch 69-kV line
- The results of the long-term load serving capability assessment indicated Options 1, 3, and 5 performed better than Options 2 and 4
- Based on the study results, Options 1, 3, and 5 were selected as the short-listed options for further evaluation

Next Step and Tentative Timeline

- Short-listed Options
  - Planned maintenance outage evaluation
  - Cost estimates and feasibility assessment
- Congestion Analysis
  - Congestion analysis may be performed based on the recommended transmission upgrades to ensure that the identified transmission upgrades do not result in new congestion within the study area
- Tentative Timeline
  - Status update at the November RPG meeting
  - Final recommendation – Q4 2022

Thank you!

Stakeholder comments also welcomed through:

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