



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

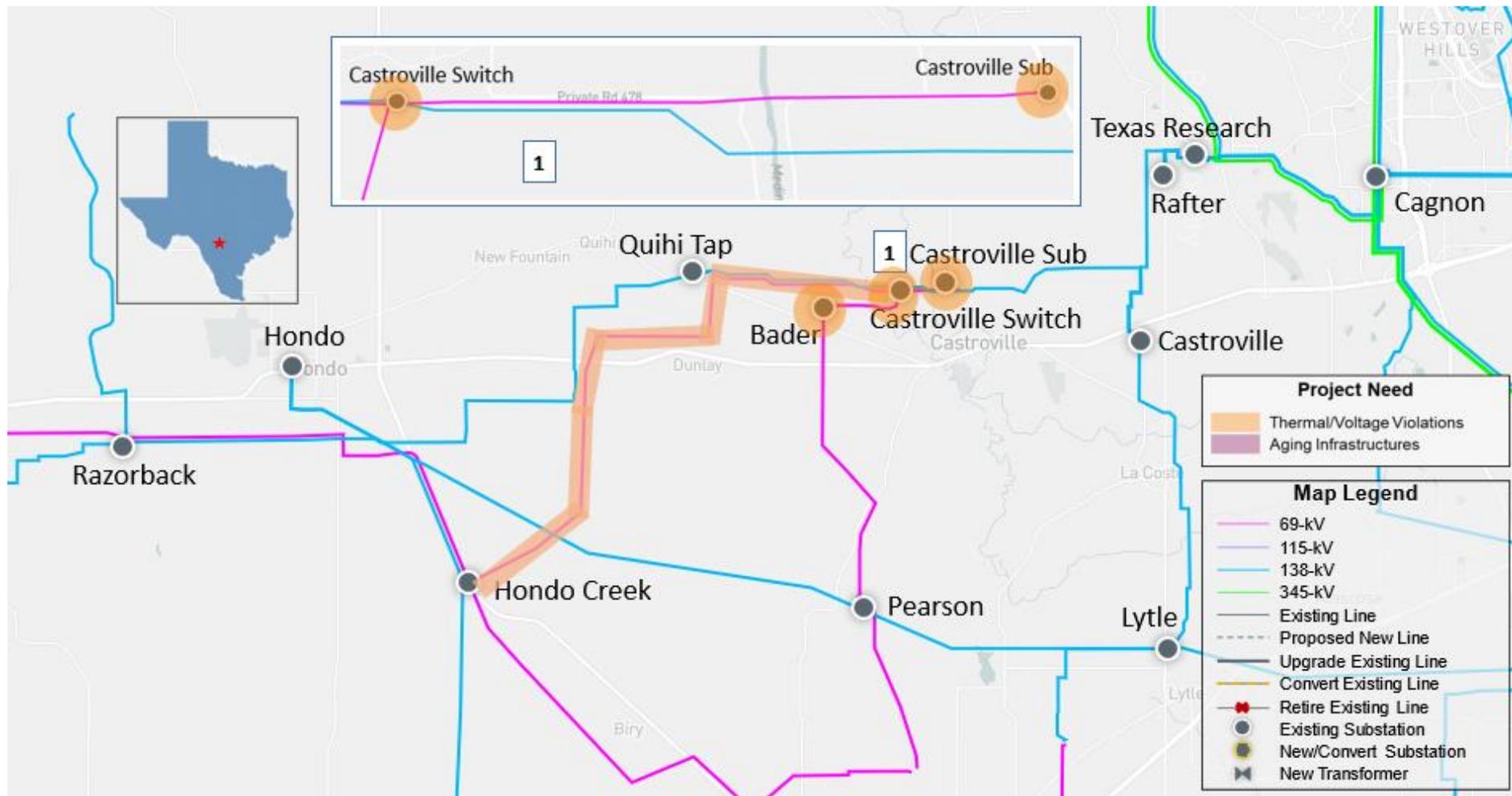
Ying Li

RPG Meeting  
November 8, 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 and status update in September and October RPG meetings
  - <https://www.ercot.com/calendar/event?id=1627677925573>
  - <https://www.ercot.com/calendar/event?id=1627677951500>

# Recap - Study Area Map with Project Need



# Recap – Results of Reliability Assessment – Study Options

- Five options were evaluated to address the project need
- All five options addressed both the reliability violations in the study area and STEC’s planning criteria violation
- Long-term load serving capability along the Hondo Creek – Castroville Sub – Pearson area

|          | Incremental 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*

## Recap - Short-Listed Options

- All five options addressed the reliability violations in the study area and 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

# Additional Studies

- Short-listed Options (Options 1, 3, and 5)
  - Planned maintenance outage evaluation
  - Cost estimates and feasibility assessment
- Congestion Analysis
  - Congestion analysis was performed based on the recommended transmission upgrades to ensure that the identified transmission upgrades do not result in new congestion within the study area

# Planned Maintenance Outage Evaluation

- Load adjusted to reflect off-peak system condition
  - South Central weather zone load adjusted only
  - Based on review of 2019 through 2021 historical load data
  - Adjustment set to 83.2% of South Central weather zone summer peak load
- ERCOT tested all N-2 contingencies along the Hondo Creek – Castroville Sub – Pearson area as a proxy for N-1-1
- Maintenance outage evaluation results for the short-listed options

|          | Miles of Thermal Overload* | Number of Unsolvable Contingencies* |
|----------|----------------------------|-------------------------------------|
| Option 1 | 3.2                        | 3                                   |
| Option 3 | 3.2                        | 1                                   |
| Option 5 | 3.2                        | 1                                   |

\* These constraints under N-2 already exist in the base case

# Cost Estimates and Feasibility Assessment

- All three short-listed options are feasible to implement based on TSP's input
- Cost Estimates

|          | Cost Estimates (\$M) |
|----------|----------------------|
| Option 1 | 37.5                 |
| Option 3 | 27.5                 |
| Option 5 | 43.3                 |

\* Cost Estimates were provided by TSPs

# Comparison of Short-listed Options

|   | Option 1                | Option 3                | Option 5                |
|---|-------------------------|-------------------------|-------------------------|
| Met ERCOT and NERC Reliability Criteria     | Yes                     | Yes                     | Yes                     |
| Met STEC Planning Criteria                  | Yes                     | Yes                     | Yes                     |
| Improved Long-term Load Serving Performance | Yes (Better)            | Yes                     | Yes (Better)            |
| Improved Operational Flexibility            | Yes                     | Yes (Better)            | Yes (Better)            |
| Required CCN                                | Maybe<br>(~ 21.8 miles) | Maybe<br>(~ 12.2 miles) | Maybe<br>(~ 22.0 miles) |
| Capital Cost Estimates* (\$M)               | 37.5                    | 27.5                    | 43.3                    |

\* Cost Estimates were provided by TSPs

- All three short-listed options addressed the reliability violations in the study area and STEC's planning criteria violation
- Options 1 and 5 provide better long-term load serving capability in the area
- Options 3 and 5 provide better operational flexibility primarily because they loop the existing Castroville to Quihi Tap 138-kV line into Castroville Sub
- Option 3 retires the existing transmission line (Hondo Creek – Castroville Switch 69-kV line) which could be used to connect a new load or nearby existing substation in the future if necessary

# Preferred Option

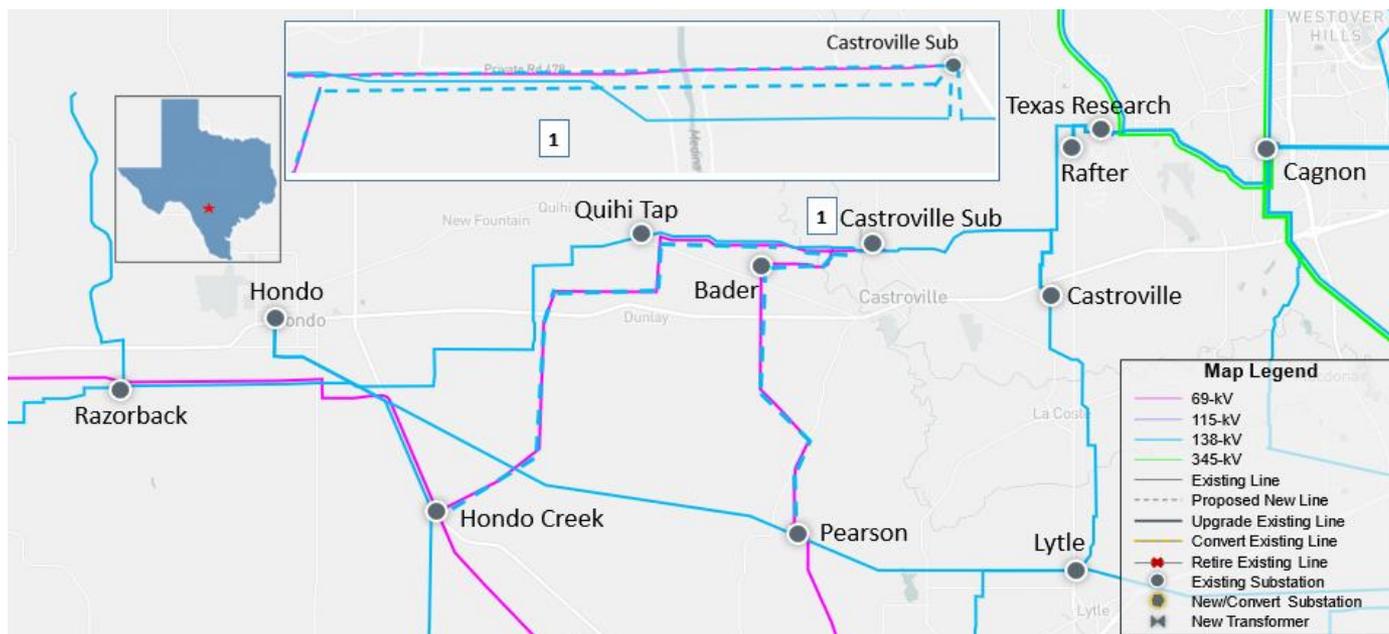
- Option 5 is selected as the preferred option based on the following considerations
  - Addresses the reliability criteria violations, STEC planning criteria violation, and aging transmission infrastructures
  - Although the estimated cost of Option 5 is higher than Options 1 and 3, it provides
    - Better long-term load serving capability for future load growth in the area
    - Better operational flexibility under planned maintenance conditions
  - Option 5 helps incorporate potential future load in the area
  - CCN may be required

# Congestion Analysis

- Congestion analysis was performed for the preferred Option 5 using the 2021 RTP 2026 Final Economic case
- Option 5 did not result in any new congestions within the study area

# ERCOT Recommendation

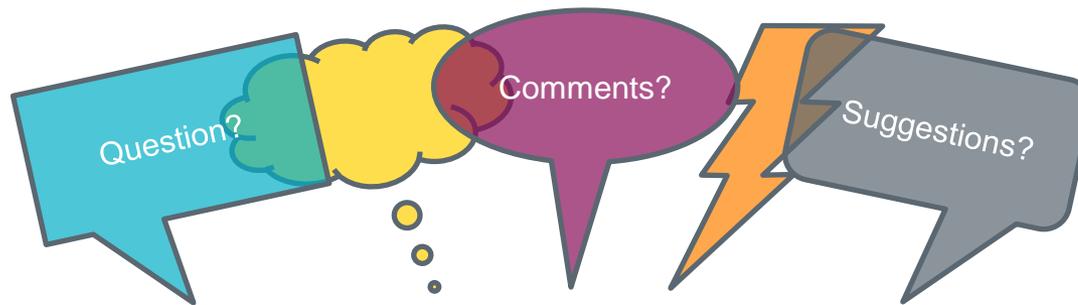
- ERCOT recommends Option 5 as the preferred option
  - Rebuild the Hondo Creek to Castroville Sub to Bader to Pearson 69-kV line to 138-kV
  - Remove the pole mounted switch of Castroville Switch
  - Upgrade the 1.5-mile of 69-kV radial line from the Castroville Switch to Castroville Sub to a double-circuit 138-kV line to form a loop
  - Construct an approximately 0.2-mile loop of the existing Castroville to Quihi Tap 138-kV line into the Castroville Sub
  - Estimated Cost: \$43.3 Million
  - CCN may be required
  - Expected In-service year: May 2024



## Next Step

- Tentative Timeline
  - ERCOT Independent Review Report to be posted in the MIS in Q4 2022

*Thank you!*



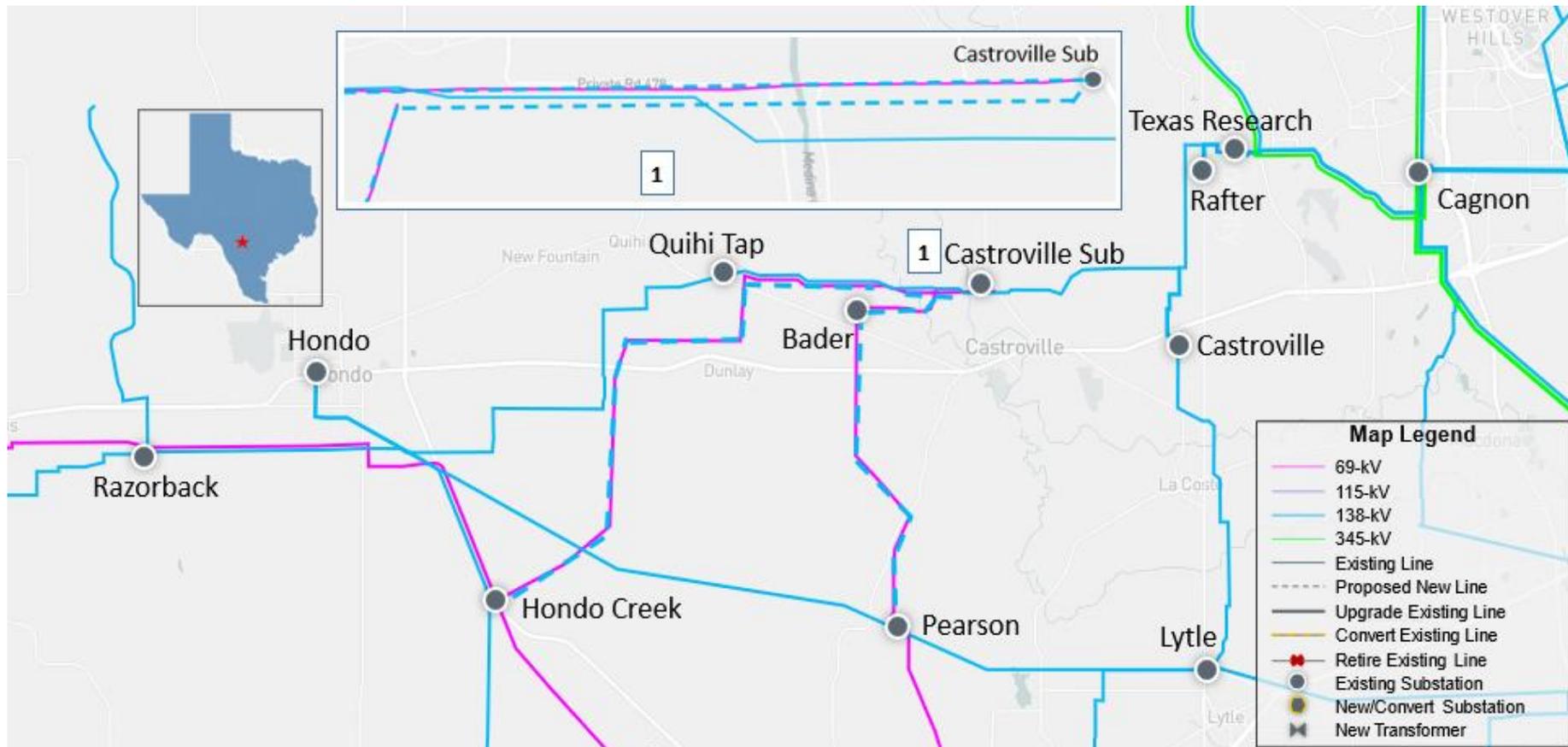
Stakeholder comments also welcomed through:

[Ying.Li@ercot.com](mailto:Ying.Li@ercot.com)

[SunWook.Kang@ercot.com](mailto:SunWook.Kang@ercot.com)

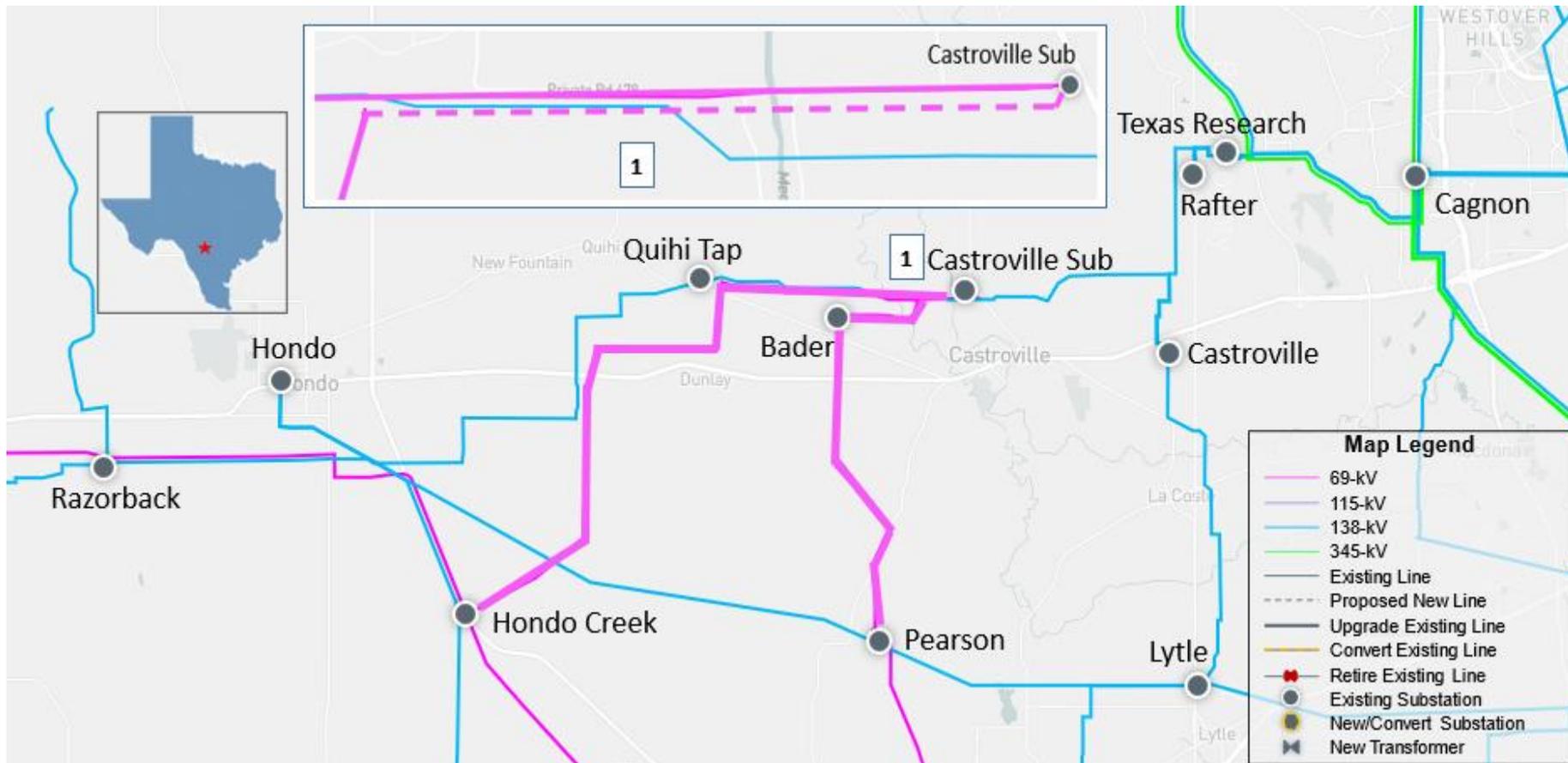
# Appendix - Option 1 (STEC Proposed Solution)

- 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
- Upgrade the 1.5-mile of 69-kV radial line from the Castroville Switch to Castroville Sub to a double-circuit 138-kV line to form a loop



# Appendix - Option 2

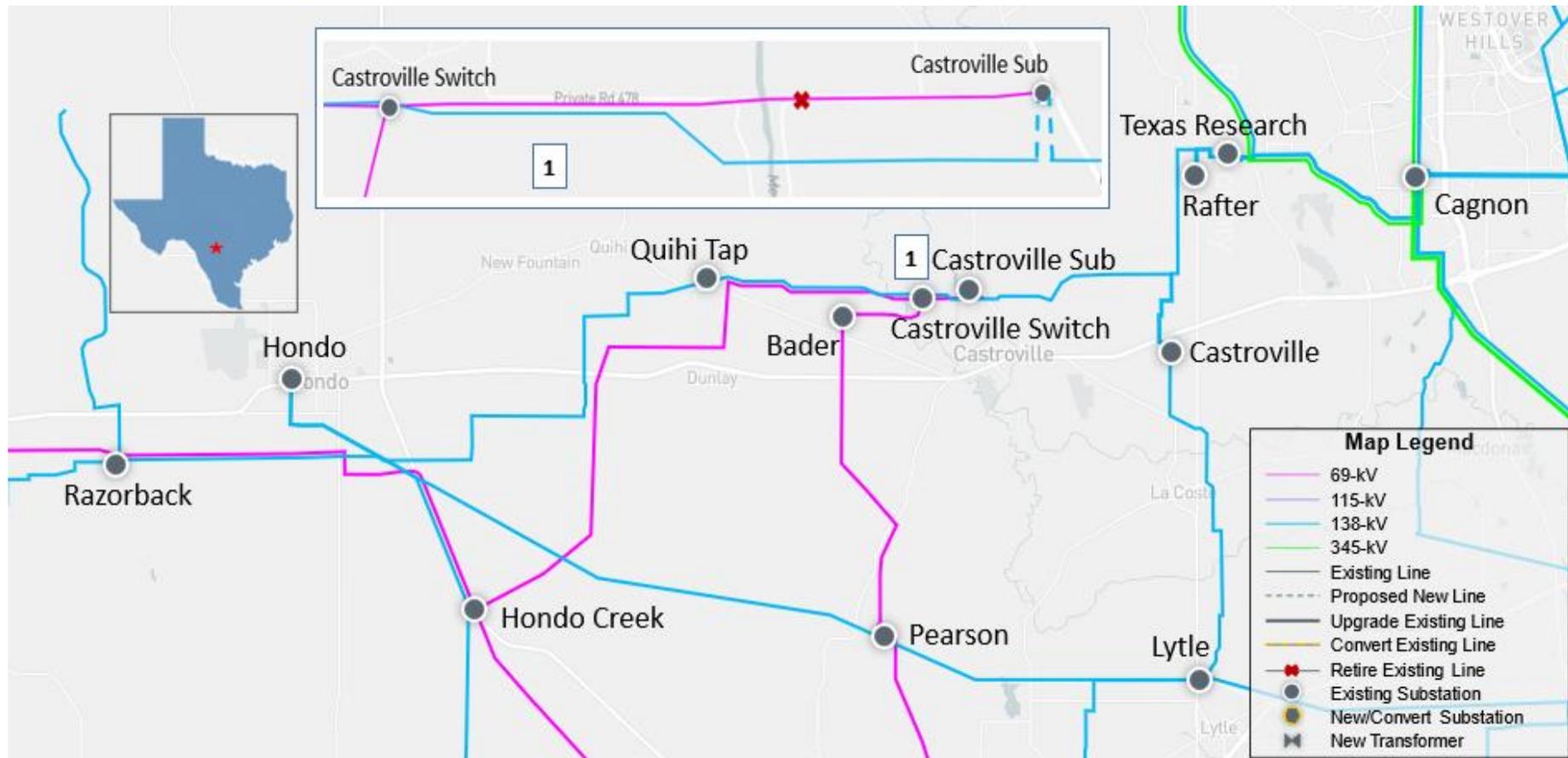
- Upgrade the Hondo Creek to Castroville Sub to Bader to Pearson 69-kV line
- Remove the pole mounted switch of Castroville Switch
- Upgrade the 1.5-mile of 69-kV radial line from the Castroville Switch to Castroville Sub to a double-circuit 69-kV line to form a loop





# Appendix - 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 0.2-mile loop of the existing Castroville to Quihi Tap 138-kV line into the Castroville Sub



# Appendix - 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
- Upgrade the 1.5-mile of 69-kV radial line from the Castroville Switch to Castroville Sub to a double-circuit 138-kV line to form a loop
- Construct an approximately 0.2-mile loop of the existing Castroville to Quihi Tap 138-kV line into the Castroville Sub

