STEC – Rio Medina Project ERCOT Independent Review Status Update

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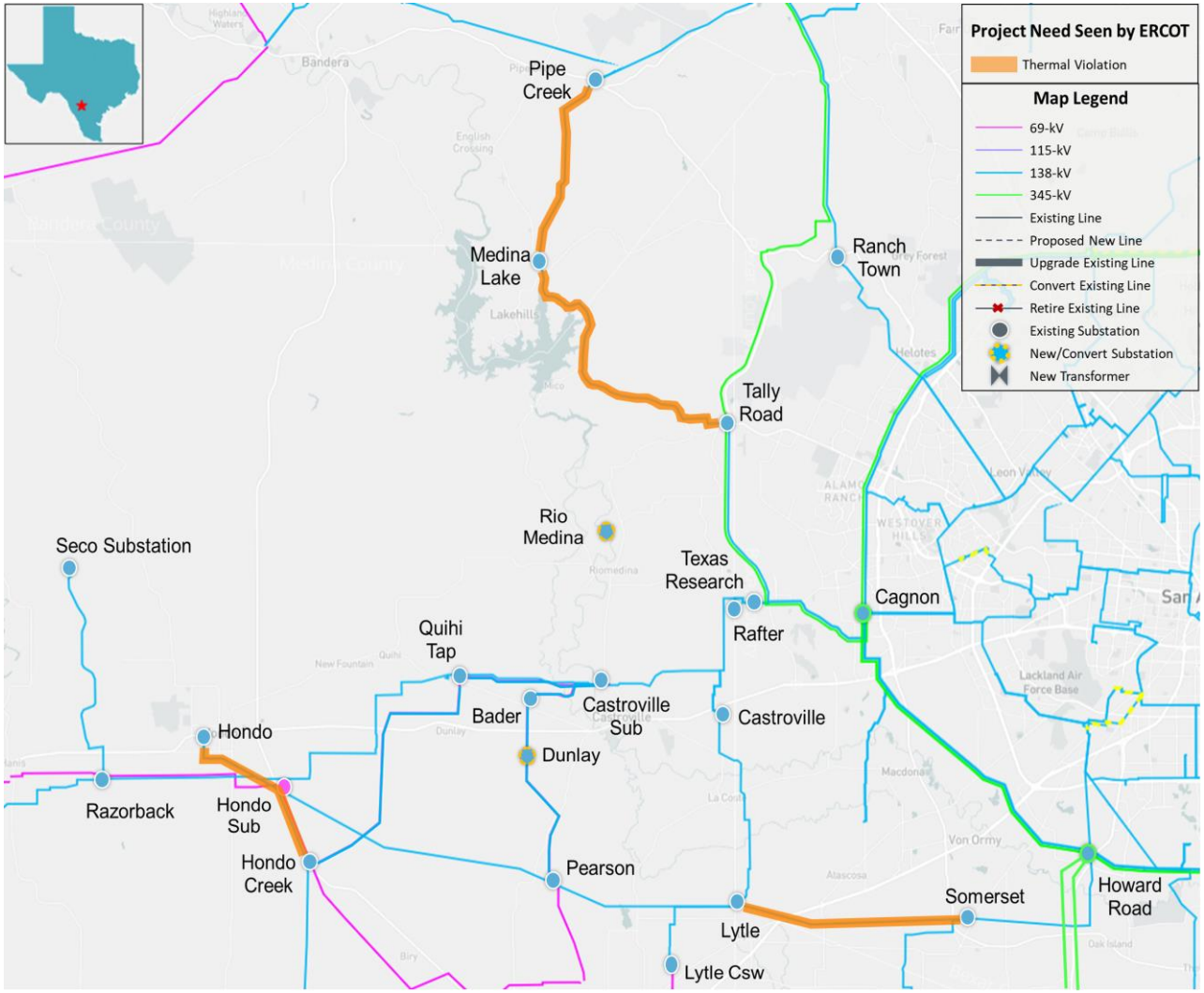
RPG Meeting
February 12, 2024

Recap

- STEC submitted the Rio Medina Project for Regional Planning Group (RPG) review in September 2023
  - This Tier 2 project is estimated to cost $38.0 million and will require Certificate of Convenience and Necessity (CCN) filings
  - Estimated in-service date is January 2027
  - The project serves a new 129 MW load at the new Rio Medina substation
- STEC provided a project overview at the October RPG meeting
  - https://www.ercot.com/calendar/10182023-RPG-Meeting
- ERCOT provided Scope at the November RPG Meeting
  - https://www.ercot.com/calendar/11142023-RPG-Meeting
- ERCOT provided a status update at the January RPG Meeting
  - https://www.ercot.com/calendar/01172024-RPG-Meeting

Recap: Study Area Map with Project Need as Seen by ERCOT under Planned Maintenance Outage Scenarios



Recap: Short-listed Options

- ERCOT conducted planned maintenance outage analysis on the six options to determine relative performance between the options

	Thermal Violations	Voltage Violations	Unsolvable Contingencies
Option 1	6	6	0
Option 2	4	14	0
Option 3	2	6	2
Option 4	1	0	0
Option 5	0	0	0
Option 6	0	0	0

- Based on the results in the above table Option 5 and Option 6 were selected for further evaluation

Recap: Long-Term Load Serving Capability Assessment

- Assumptions
  - Adjusted load up in the study area, excluding flexible loads in the area
  - Adjusted conforming load down outside of study area to balance power
  - Based on N-1 contingency
- Preliminary Findings
  - Option 6 provides more load serving capability then option 5

Option	Incremental Load Serving Capability (MW)
5	416 MW
6	444 MW

Analysis Performed

- Options Evaluation
  - Cost Estimate and Feasibility Assessment
- ERCOT Preferred Option Selected
  - Congestion Analysis

Cost Estimates and Feasibility Assessment

- Transmission Service Providers (TSPs) performed feasibility assessments and provided cost estimates for the short-listed options

Option	Cost Estimates* ($M)	CCN Required* (Miles)	Feasibility
5	$71.7	22.1	Yes
6	$77.9	25.7	Yes

* Cost Estimates and mileages were provided by TSPs

Comparison of Short-listed Options

	Option 5	Option 6
Met ERCOT and NERC Reliability Criteria	Yes	Yes
Improved Long-term Load Serving Performance	Yes(Better)	Yes (Best)
Improved Operational Flexibility	Yes	Yes
Required CCN	~ 22.1 miles	~ 25.7 miles
Capital Cost Estimates* ($M)	$71.7M	$77.9M

* Cost Estimates were provided by TSPs

- Option 5 and Option 6 addressed the reliability criteria violations in the study area
- Option 5 is the least cost option
- Option 5 requires less miles of CCN then Option 6
- Option 6 provided slightly better long-term load serving capability than Option 5

Preferred Option

- Option 5 is selected as the preferred option based on the following considerations
  - The least cost solution
  - Addresses the reliability criteria violations
  - Improves long-term load serving capability for future load growth in the area
  - Provides operational flexibility

Congestion Analysis

- Congestion analysis was performed for the preferred Option 5 using the 2023 RTP 2028 Final Economic case
- Option 5 relieved one existing congestion and caused one new congestion as shown below within the study area

Monitored Line	% Time of Congestion	New / Existing
Tally Road to Texas Research 138-kV Line	0.22	Existing
Medina Lake to Pipe Creek 138-kV Line	0.14	New

- Upgrading the new congested line did not yield any economic benefit and therefore will not be recommended for upgrade as part of this project

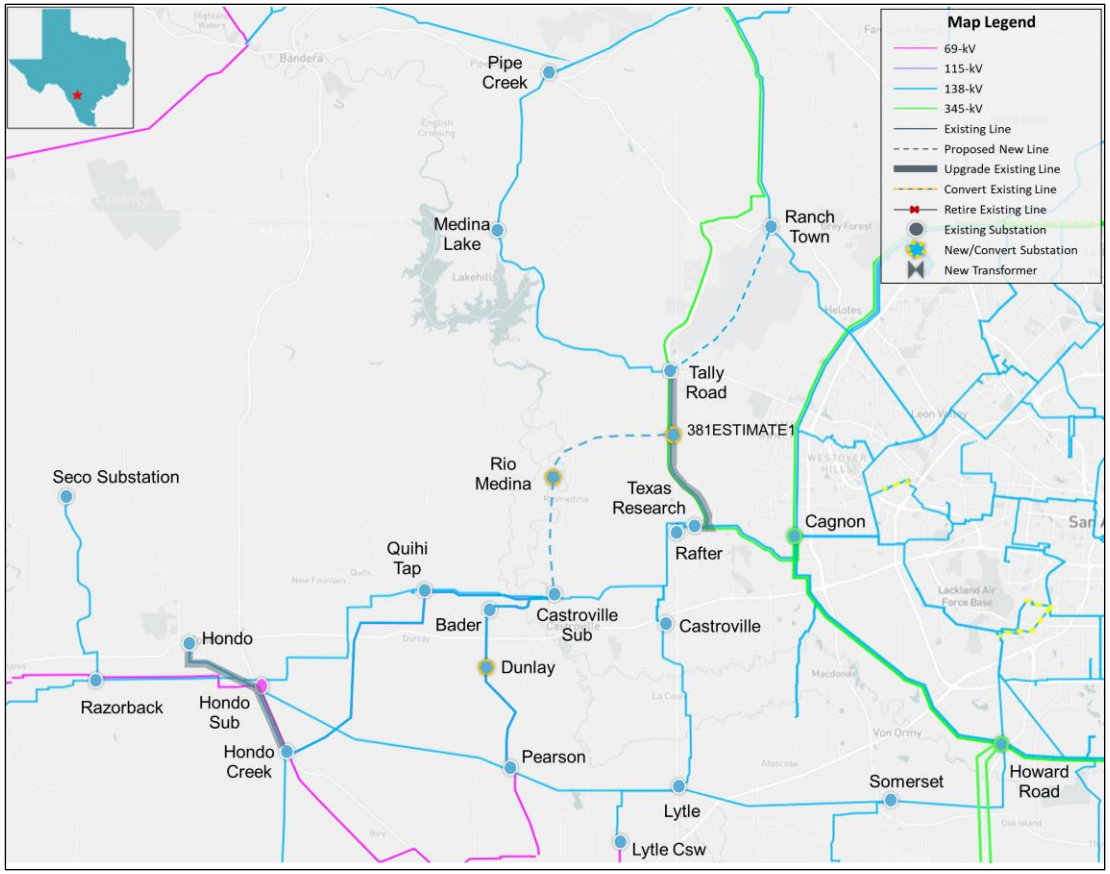
Upgrade Tested	Mileage (mi)	Passed Production Cost Savings Test	Passed Generation Revenue Reduction Test
Medina Lake to Pipe Creek 138-kV Line Upgrade	7.83	No	No

ERCOT Recommendation

- ERCOT recommends Option 5
  - Estimated Cost: $71.7 million
  - Expected In-Service Date: January 2027
  - CCN is required for
    - Construction of the new 4.5-mile Castroville Sub to Rio Medina 138-kV transmission line
    - Construction of the new 5.6-mile Rio Medina to 381Estimate1 138-kV transmission line
    - Construction of the new 12-mile Ranch Town to Tally Road 138-kV transmission line

ERCOT Recommendation (cont.)

- Construct Rio Medina and 381Estimate1 138-kV substations
- Construct Castroville Sub – Rio Medina 138-kV line and Rio Medina – 381Estimate1 138-kV line
- Upgrade Hondo to Hondo Creek 138-kV line
- Upgrade Tally Road to 381Estimate1 138-kV line
- Upgrade 381Estimate1 to Texas Research 138-kV line
- Construct a new Tally Road - Ranch Town 138-kV line, approximately 11-mile
- Add a Capacitor bank at Dunlay substation



Next Steps and Tentative Timeline

- Tentative Timeline
  - ERCOT Independent Review Report to be posted in the MIS in February 2024

Thank you!

Stakeholder comments also welcomed through:

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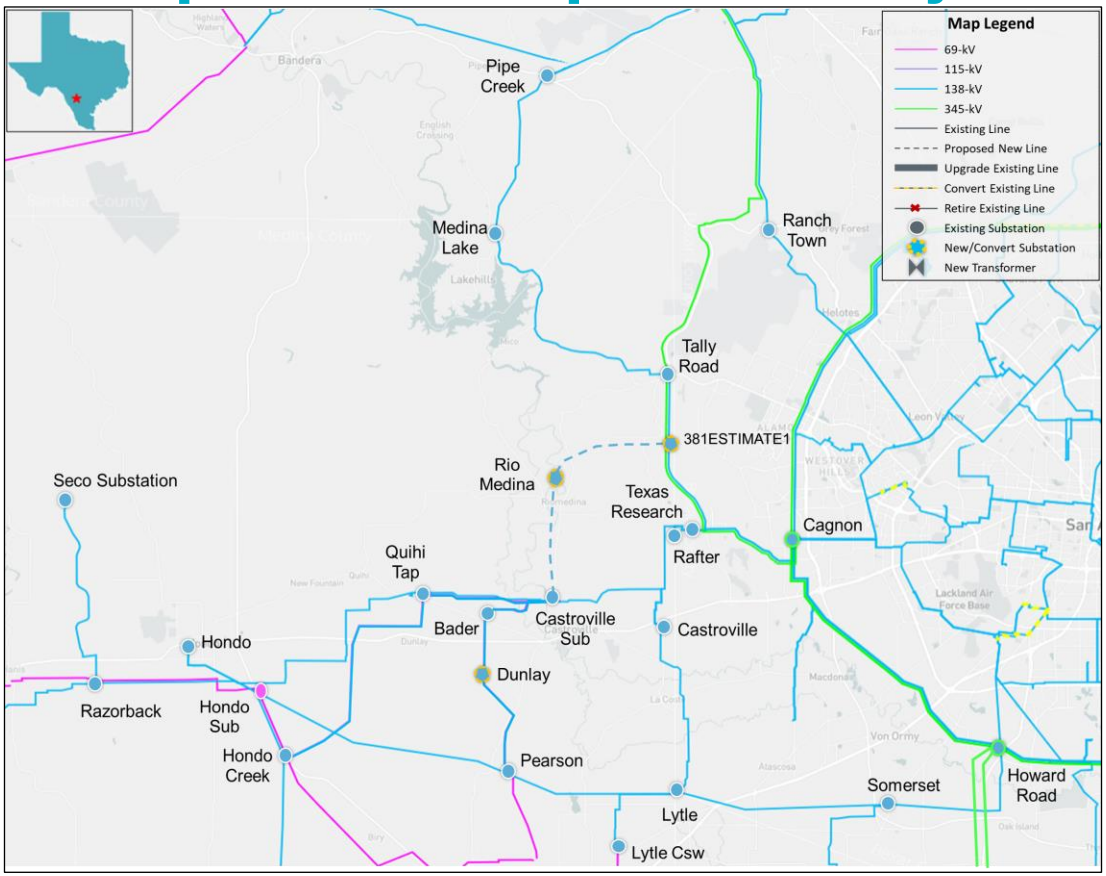
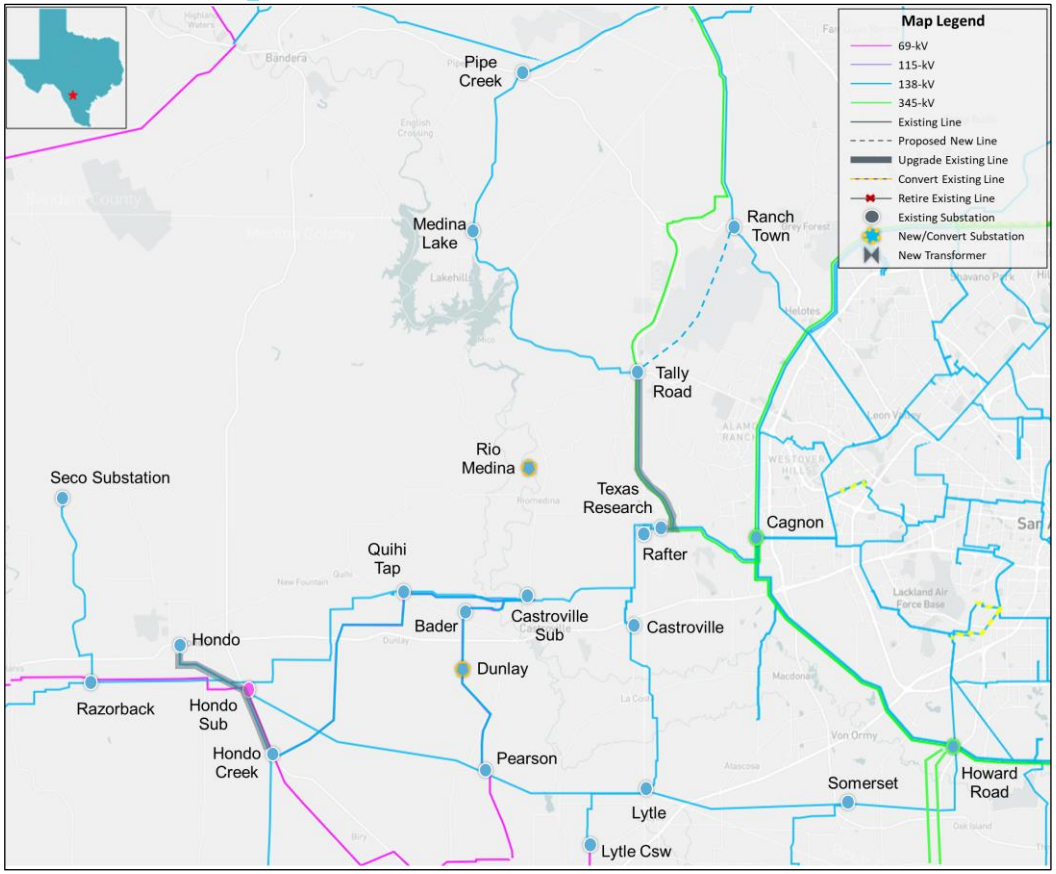
Appendix – Option 1 Proposed Project by STEC



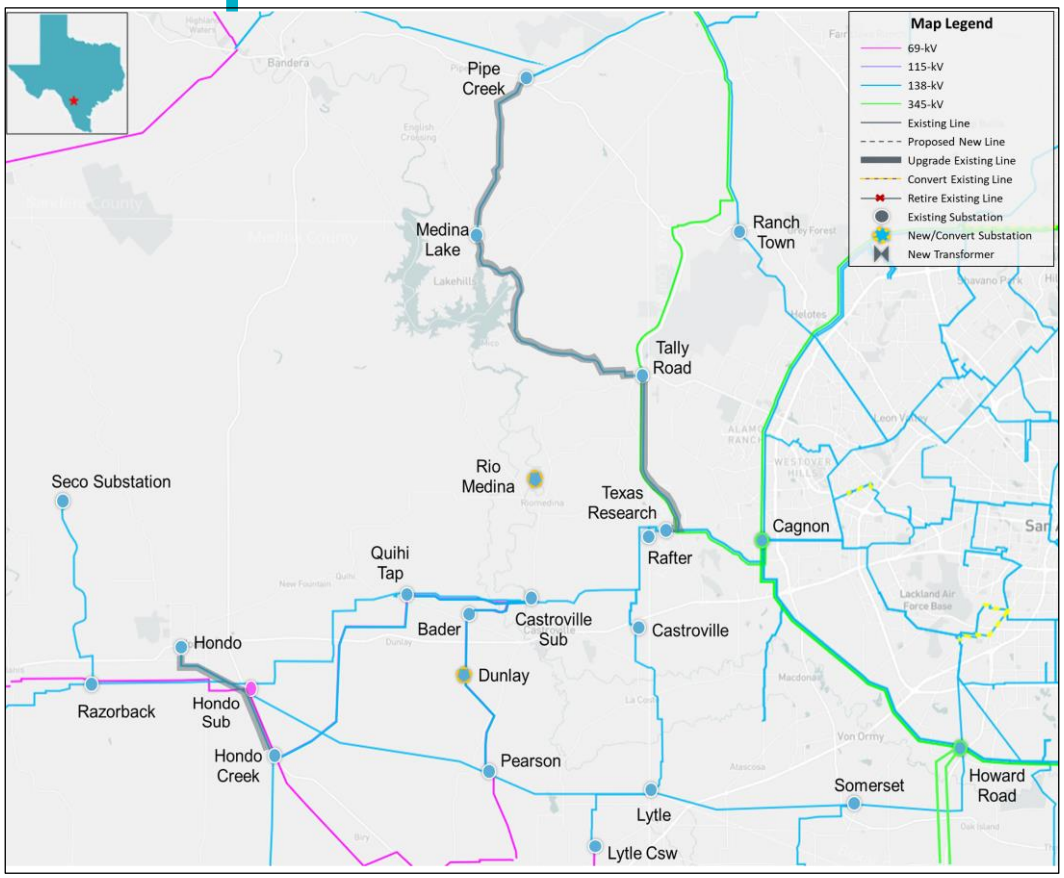
- Construct a new Rio Medina 138-kV substation
- Construct a new 4.5 miles Rio Media – Castroville Sub 138-kV single-circuit line on a double-circuit structure with at least 427 MVA normal rating and 474 MVA emergency rating
- Construct a new 381Estimate1 138-kV substation which cuts into the existing Texas Research and Tally Road 138-kV line
- Construct a new 8.8 miles Rio Media - 381Estimate1 138-kV single-circuit line on a double-circuit structure with at least 427 MVA normal rating and 474 MVA emergency rating

Appendix – Option 2



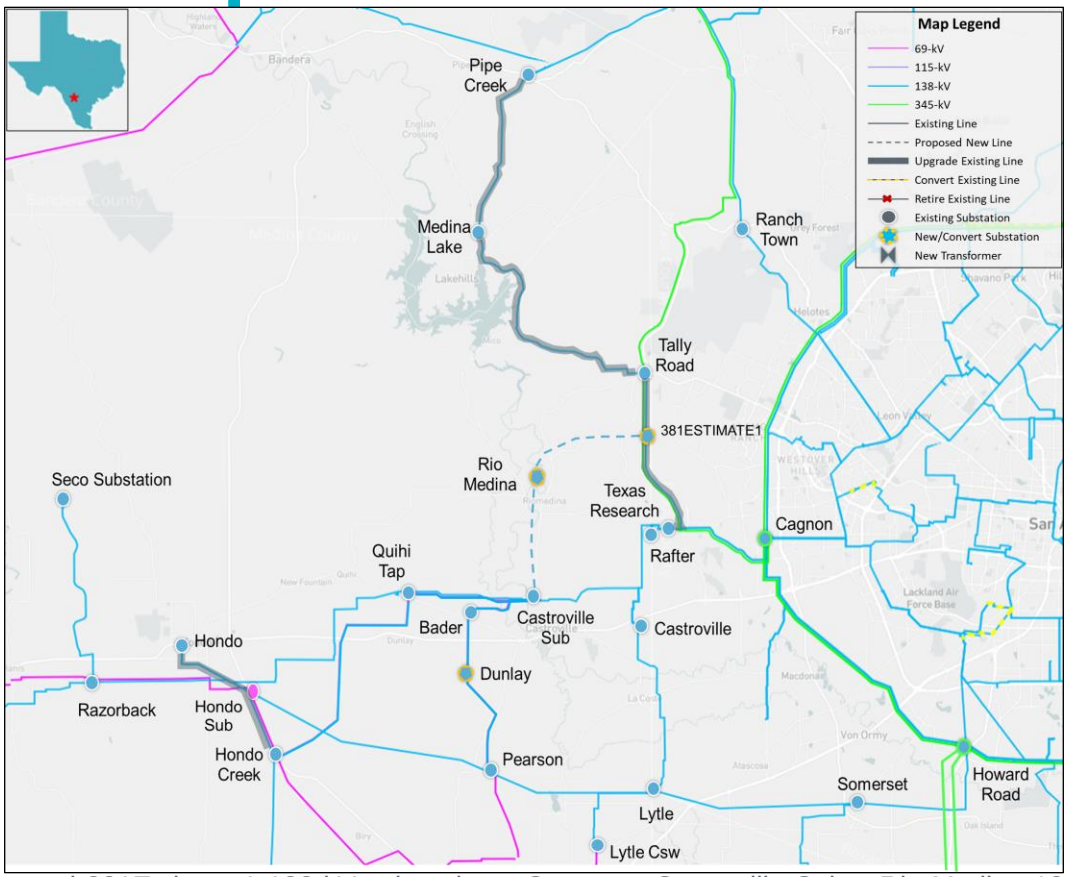
- Upgrade Hondo to Hondo Creek 138-kV line with at least 285 MVA normal rating and emergency rating
- Upgrade approximately 8 miles Tally Road to Texas Research 138-kV line with at least 469 MVA normal rating and emergency rating
- Construct a new approximately 9.5 miles Tally Road - Ranch Town 138-kV line with at least 469 MVA normal rating and emergency rating
- Add a Capacitor bank at Dunlay substation

Appendix – Option 3



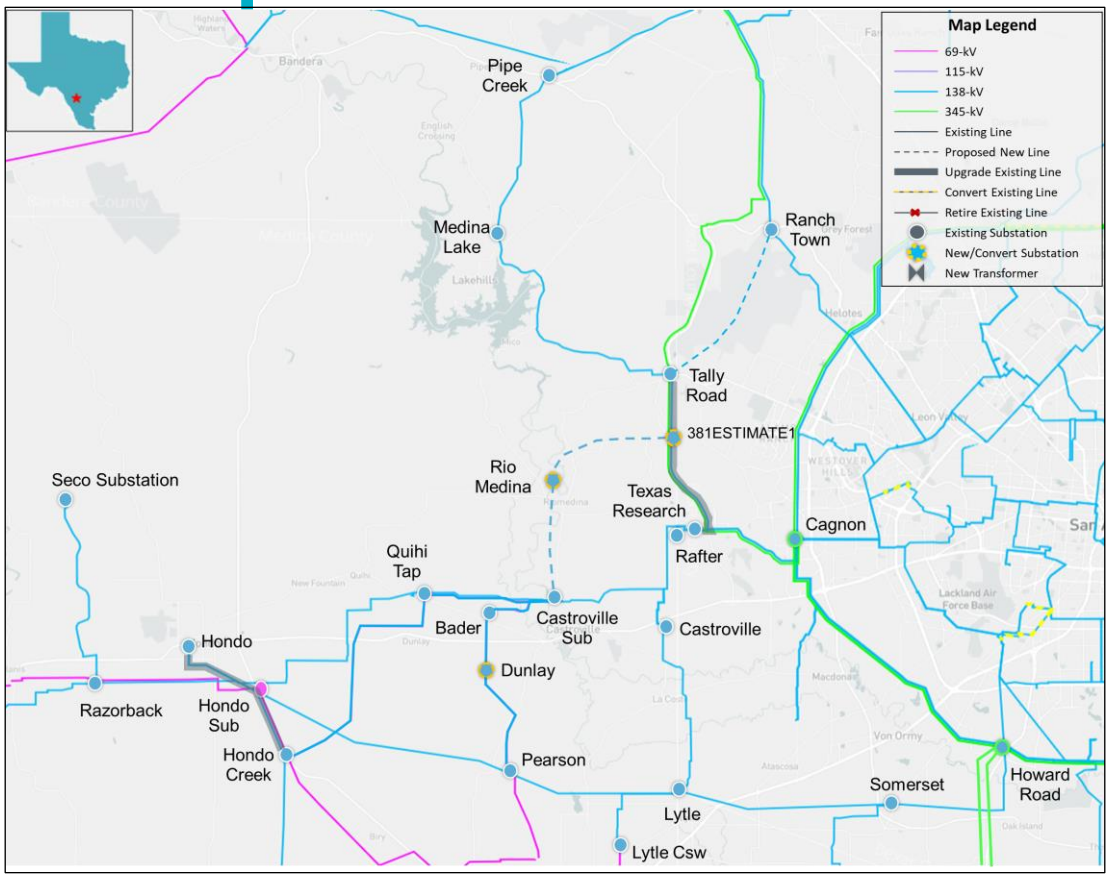
- Upgrade Hondo to Hondo Creek 138-kV line with at least 285 MVA normal rating and emergency rating
- Upgrade approximately 8 miles Tally Road to Texas Research 138-kV line with at least 469 MVA normal rating and emergency rating
- Upgrade approximately 8 miles Pipe Creek- Medina Lake and approximately 12.4 miles Medina Lake - Tally Road 138-kV line with at least 469 MVA normal rating and emergency rating
- Add a Capacitor bank at Dunlay substation

Appendix – Option 4



- Construct Rio Medina and 381Estimate1 138-kV substations. Construct Castroville Sub – Rio Medina 138-kV line and Rio Medina – 381Estimate1 138-kV lines with at least 427 MVA normal rating and 474 MVA emergency rating
- Upgrade Hondo to Hondo Creek 138-kV line with at least 285 MVA normal rating and emergency rating
- Upgrade approximately 3 miles Tally Road to 381Estimate1 and approximately 5 miles 381Estimate1 to Texas Research 138-kV lines with at least 469 MVA normal rating and emergency rating
- Upgrade approximately 8 miles Pipe Creek- Medina Lake and approximately 12.4 miles Medina Lake - Tally Road 138-kV line with at least 469 MVA normal rating and emergency rating
- Add a Capacitor bank at Dunlay substation and Rio Medina substation

Appendix – Option 5



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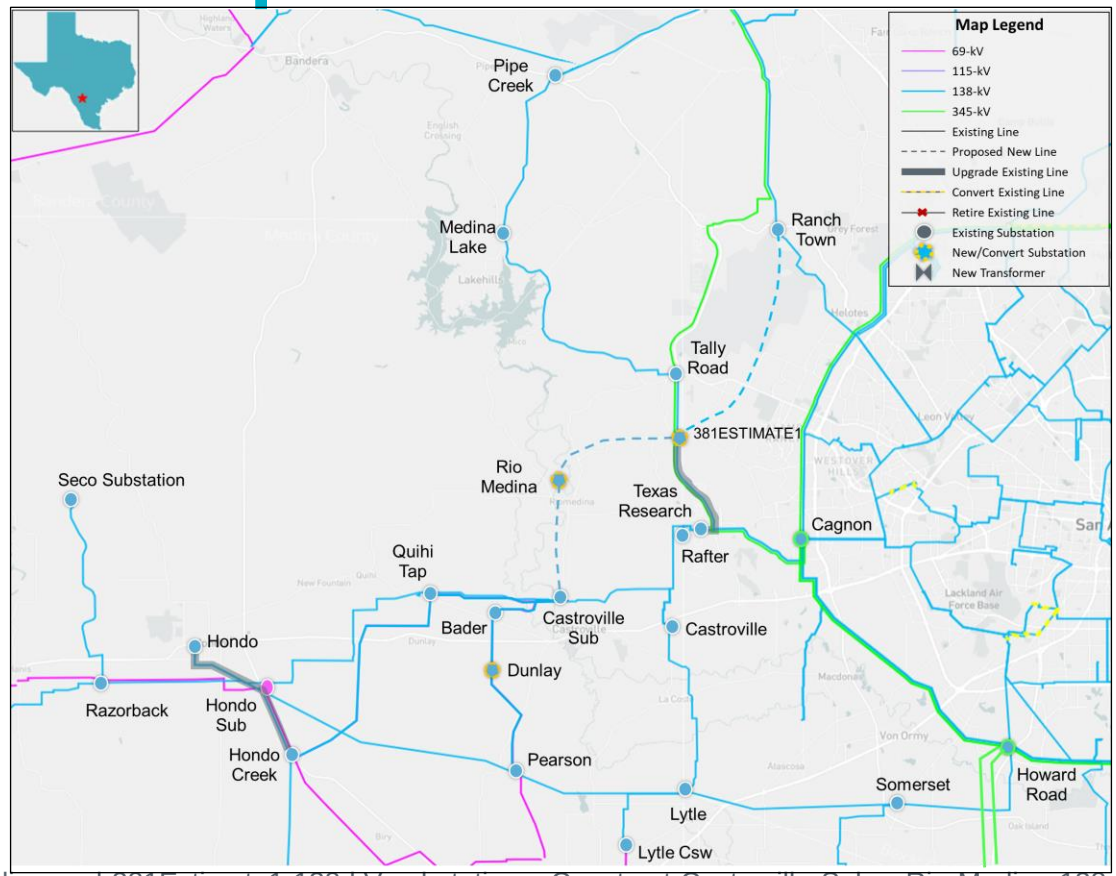
- Upgrade Hondo to Hondo Creek 138-kV line with at least 285 MVA normal rating and emergency rating
- Upgrade approximately 3 miles Tally Road to 381Estimate1 and approximately 5 miles 381Estimate1 to Texas Research 138-kV lines with at least 469 MVA normal rating and emergency rating
- Construct a new approximately 11 miles Tally Road - Ranch Town 138-kV line with at least 469 MVA normal rating and emergency rating
- Add a Capacitor bank at Dunlay substation

Appendix – Option 6



- Construct Rio Medina and 381Estimate1 138-kV substations. Construct Castroville Sub – Rio Medina 138-kV line and Rio Medina – 381Estimate1 138-kV lines with at least 427 MVA normal rating and 474 MVA emergency rating
- Upgrade Hondo to Hondo Creek 138-kV line with at least 285 MVA normal rating and emergency rating
- Upgrade approximately 5 miles 381Estimate1 to Texas Research 138-kV line with at least 469 MVA normal rating and emergency rating
- Construct a new approximately 13 miles 381Estimate1 - Ranch Town 138-kV line with at least 469 MVA normal rating and emergency rating
- Add a Capacitor bank at Dunlay substation

Appendix – New Transmission Projects Added

TPIT No	Project Name	Tier	Project ISD	TSP	From County
22RPG048	San Antonio South Reliability Project	Tier 1	Jun-27	CPS	Bexar, Atascosa
22RPG022	Hondo Creek to Pearson 69 kV Transmission Line Rebuild Project	Tier 2	Dec-23, Jun-24	STEC	Medina
23RPG024	Big Foot to Dilley Switch 138 kV Conversion	Tier 4	Aug-26	AEPSC	Frio
67992	CPSE_345KV_Howard_Switching_Station	Tier 3	Feb-24	CPS	Bexar
68266	Dry Frio: Build new 138 kV station	Tier 4	May-24	AEP TNC	Uvalde
70536	New 138 kV Verde Circle Substation	Tier 4	Oct-24	CPS	Bexar
72500	Rio Lago - New 138kV Substation	Tier 4	Nov-24	BEC	Bandera
72268	CPSE_New Ingram Rd Substation	Tier 4	May-25	CPS	Bexar
76576	Asherton to Uvalde: Convert to 138 kV	Tier 3	May-25	AEP TCC	Dimmit
76580	Poblano: Build new 138 kV station	Tier 3	May-25	AEP TCC	Uvalde
71873	CPSE_Hill Country Auto# 2 Impedance Upgrade	Tier 4	Sep-25	AEP	Medina
73063	Big Foot to Lytle: Convert to 138 kV	Tier 4	Sep-25	AEP	Medina
67915	Asherton to West Basteville 138 kV line Rebuild	Tier 3	Dec-26	BEC	Dimmit
71871	CPSE_Cagnon to Shepherd Rd Rebuild Phase A	Tier 4	May-23	CPS	Bexar

Appendix – New Generation Projects Added

GINR	Project Name	Fuel	Projected COD	Capacity (MW)	County
21INR0395	SunRay	Solar	05/23/2024	200	Uvalde
22INR0368	Padua Grid BESS	Battery	12/31/2024	51.39	Bexar
22INR0422	Ferdinand Grid BESS	Battery	05/31/2026	202.65	Bexar
23INR0381	Soportar ESS	Battery	03/15/2025	102.11	Bexar