



# **Brownsville Area Improvements Transmission Project – ERCOT Independent Review Status Update**

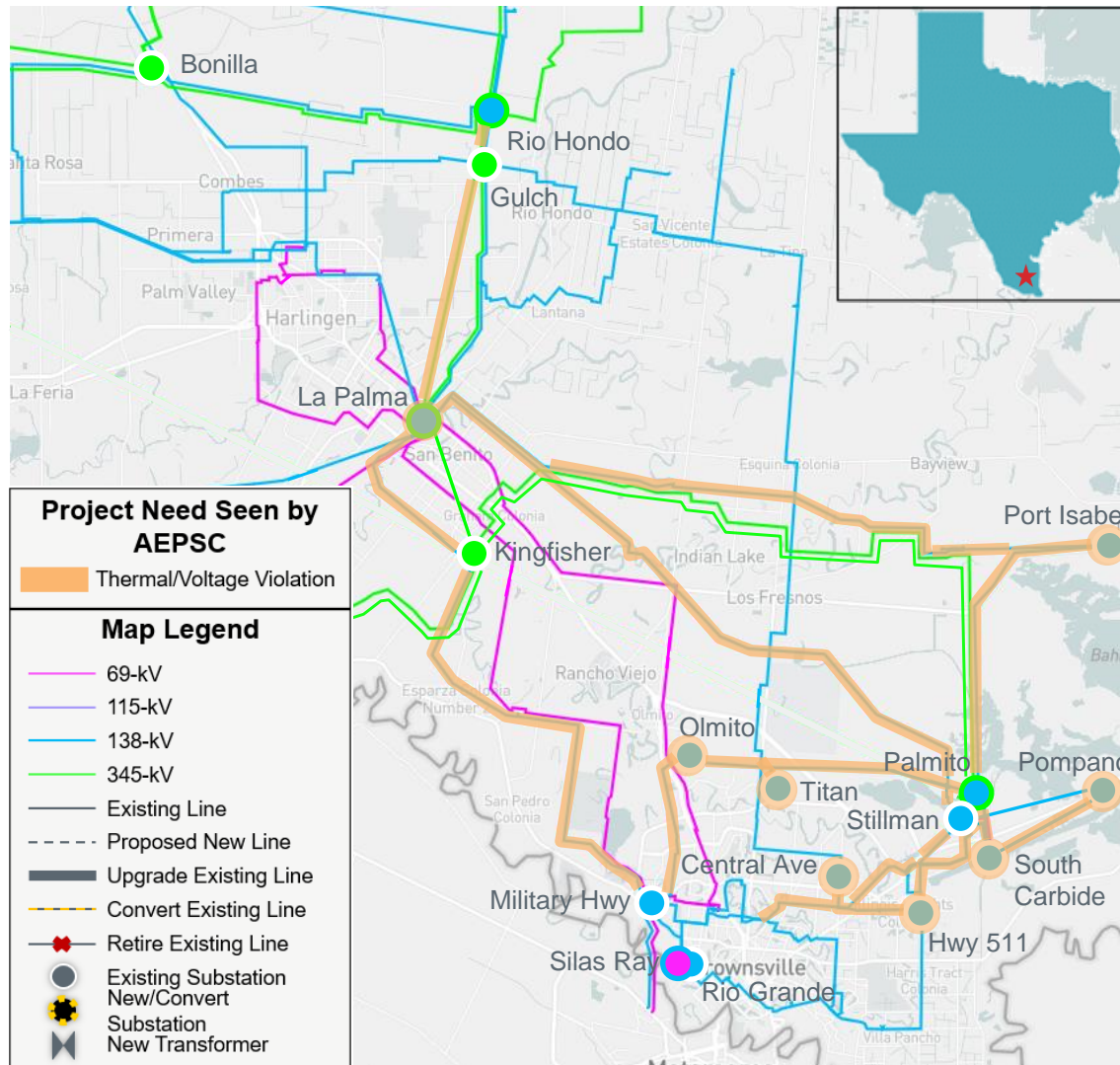
Caleb Holland

RPG Meeting  
July 16, 2024

# Recap

- American Electric Power Service Corporation (AEPSC) submitted the Brownsville Area Improvements Transmission Project for Regional Planning Group (RPG) review in March 2024
  - This Tier 1 project is estimated to cost \$387.7 million and will require a Certificate of Convenience and Necessity (CCN)
  - Estimated in-service date is May 2027
  - Addresses both thermal overloads and voltage violations in the Brownsville area upon addition of new large load
- ERCOT provided the study scope at the June 2024 RPG Meeting
  - <https://www.ercot.com/calendar/06112024-RPG-Meeting>
- This project is currently under ERCOT Independent Review (EIR)

# Recap: Study Area Map with Violations Seen by AEPSC

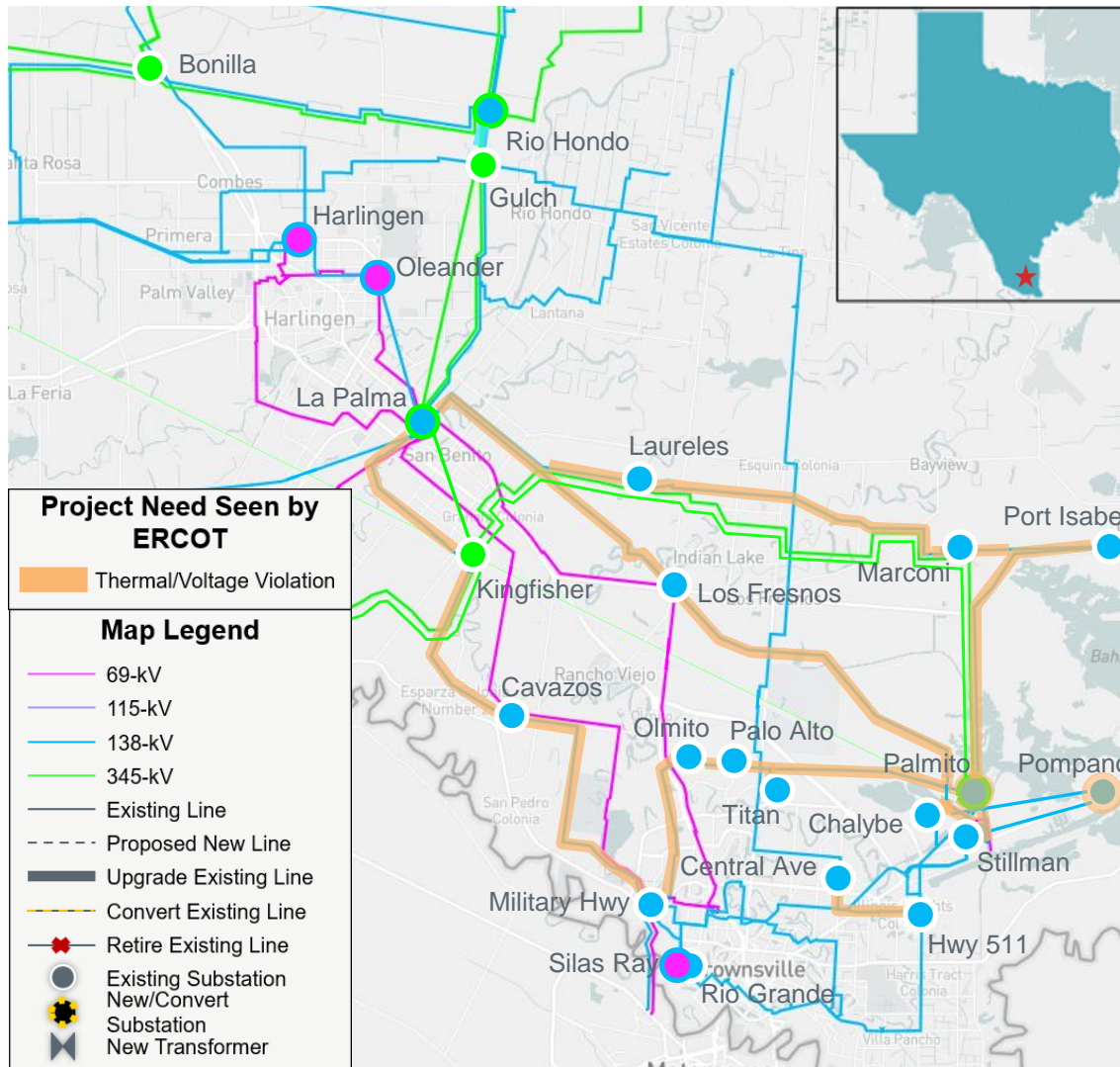


# Preliminary Results of Reliability Assessment – Base Case

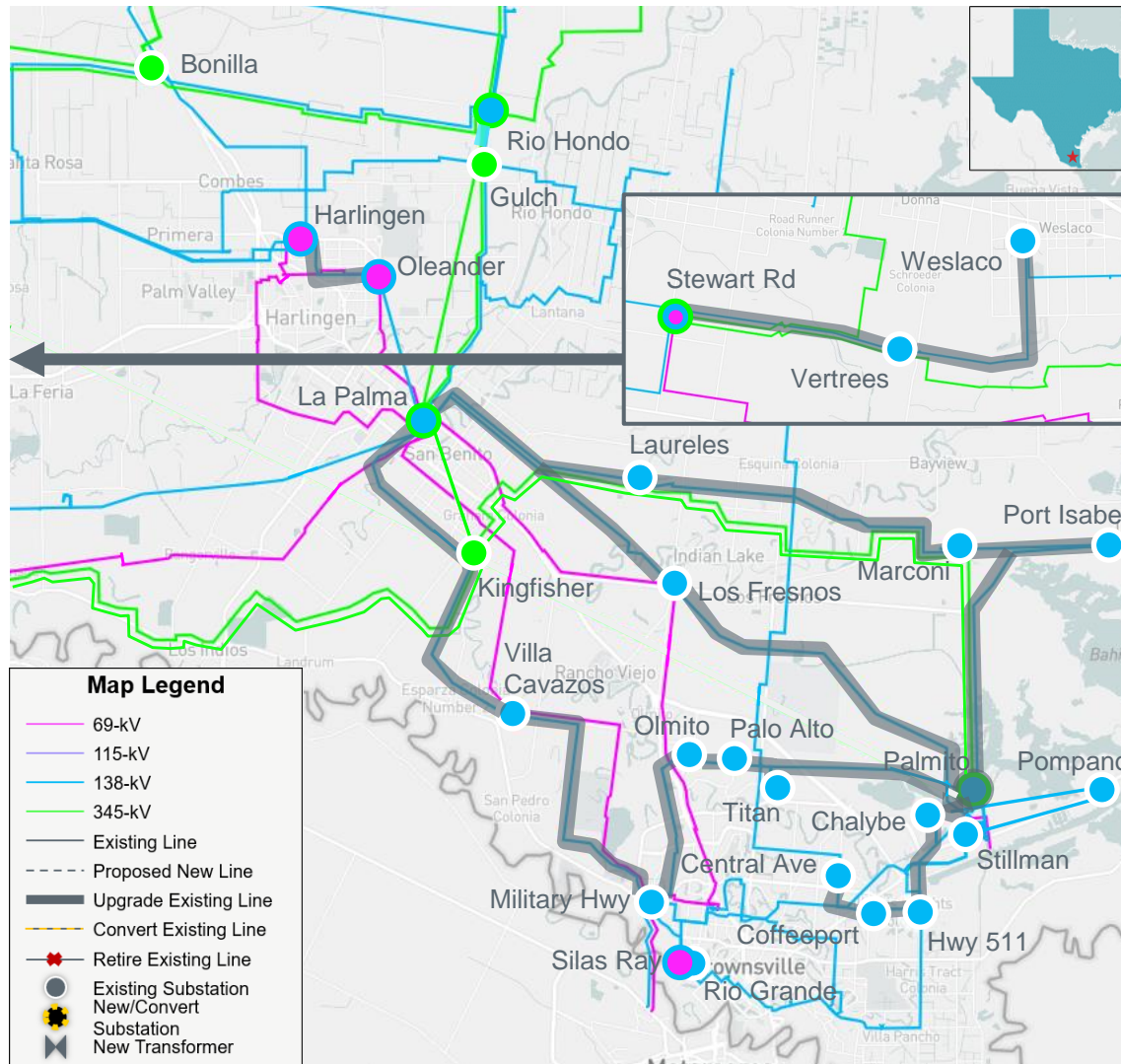
Contingency Category*	Unsolved Power Flow	Voltage Violations	Thermal Overloads
P1	None	1	14
P2, P4, P5	None	None	None
P3 (G-1+N-1)*	None	None	1
P6.2 (X-1+N-1)*	None	None	1
P7	None	None	4

\*See Appendix C for list of G-1 generators and X-1 transformers tested

# Project Need as Seen by ERCOT



# Option 1 – Alternative Proposed by AEPSC



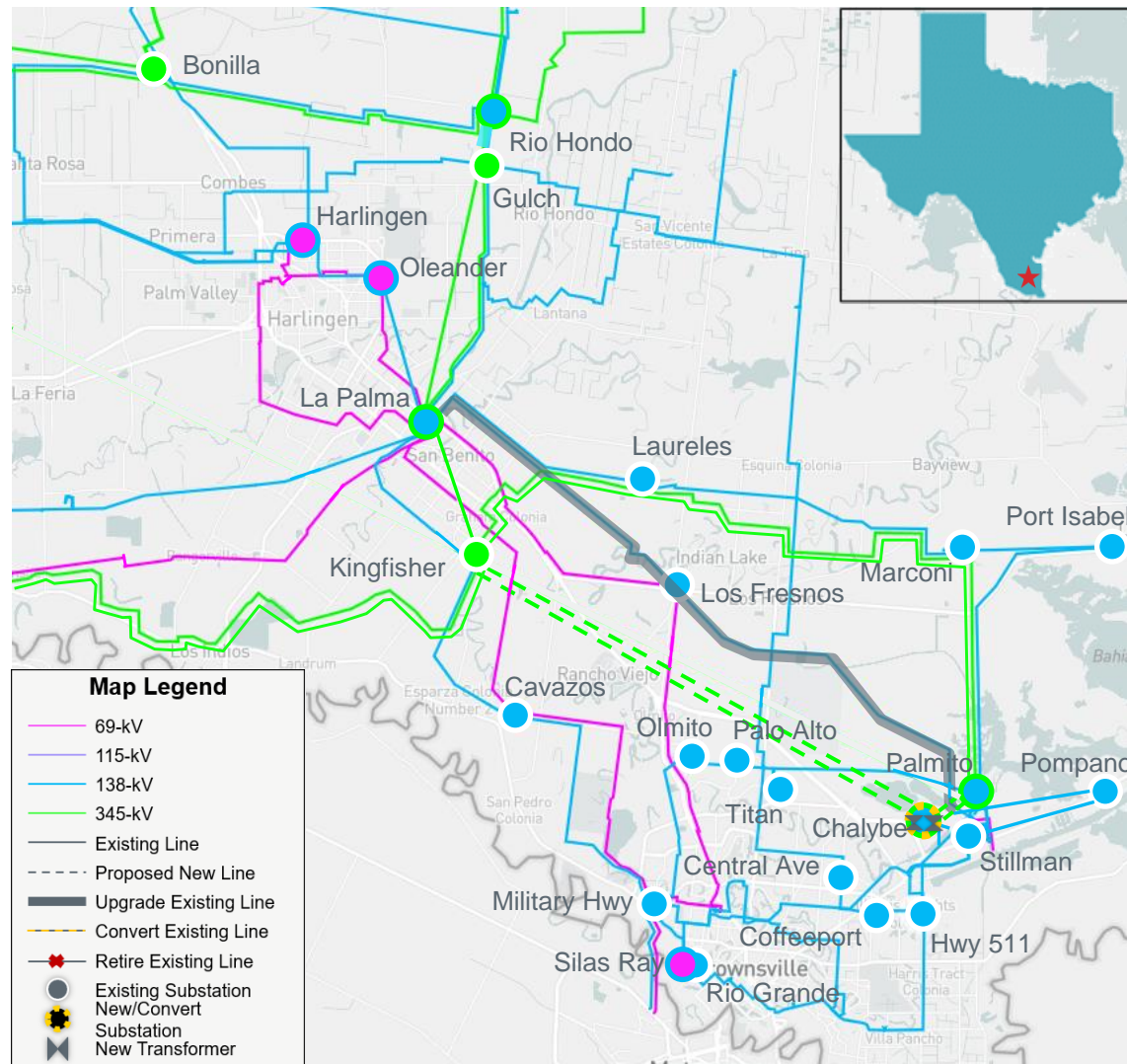


# Option 1 – Alternative Proposed by AEPSC

- Rebuild the 8.4-mile 138-kV single circuit transmission line from Laureles to Marconi rated 717 MVA
- Rebuild the 9.4-mile 138-kV single circuit transmission line from Laureles to La Palma rated 717 MVA
- Rebuild the 2.4-mile 138-kV single circuit transmission line from Central Ave to Coffeepoint rated 717 MVA
- Rebuild the 4.5-mile 138-kV single circuit transmission line from Highway 511 to Chalybe rated 717 MVA
- Rebuild the 1.1-mile 138-kV single circuit transmission line from Highway 511 to Coffeepoint rated 717 MVA
- Rebuild the 2.5-mile 138-kV single circuit transmission line from Titan to Palo Alto rated 717 MVA
- Rebuild the 7.3-mile 138-kV single circuit transmission line from Titan to Chalybe rated 717 MVA
- Replace 2 138-kV bus ties at Military Hwy with ones rated 717 MVA
- Rebuild the 0.4-mile 138-kV single circuit transmission line from Palo Alto to Olmito rated 717 MVA
- Rebuild the 6.2-mile 138-kV single circuit transmission line from Marconi to Port Isabel rated 717 MVA
- Rebuild the 5.5-mile 138-kV single circuit transmission line from Military to Olmito rated 717 MVA
- Rebuild the 10.3-mile 138-kV single circuit transmission line from La Palma to Fresno rated 535 MVA
- Rebuild the 12.2-mile 138-kV single circuit transmission line from La Palma to Villa Cavazos rated 535 MVA
- Rebuild the 3.3-mile 138-kV single circuit transmission line from Harlingen to Oleander rated 717 MVA
- Rebuild the 12.0-mile 138-kV single circuit transmission line from Fresno to Stillman rated 717 MVA
- Rebuild the 12.9-mile 138-kV single circuit transmission line from Port Isabel to Chalybe rated 717 MVA
- Rebuild the 10.0-mile 138-kV single circuit transmission line from Military to Villa Cavazos rated 717 MVA
- Rebuild the 6.0-mile 138-kV single circuit transmission line from Weslaco to Vertrees rated 717 MVA
- Rebuild the 6.9-mile 138-kV single circuit transmission line from Vertrees to Stewart rated 717 MVA
- Rebuild the 0.43-mile 138-kV double circuit transmission line from Palmito to Stillman rated 717 MVA
- Replace both 345/138-kV 3-winding autotransformers at Palmito with ones rated 675-MVA
- Install a +/-300 MVAR STATCOM at Chalybe

# Option 2 – Preferred Option Proposed by AEPSC

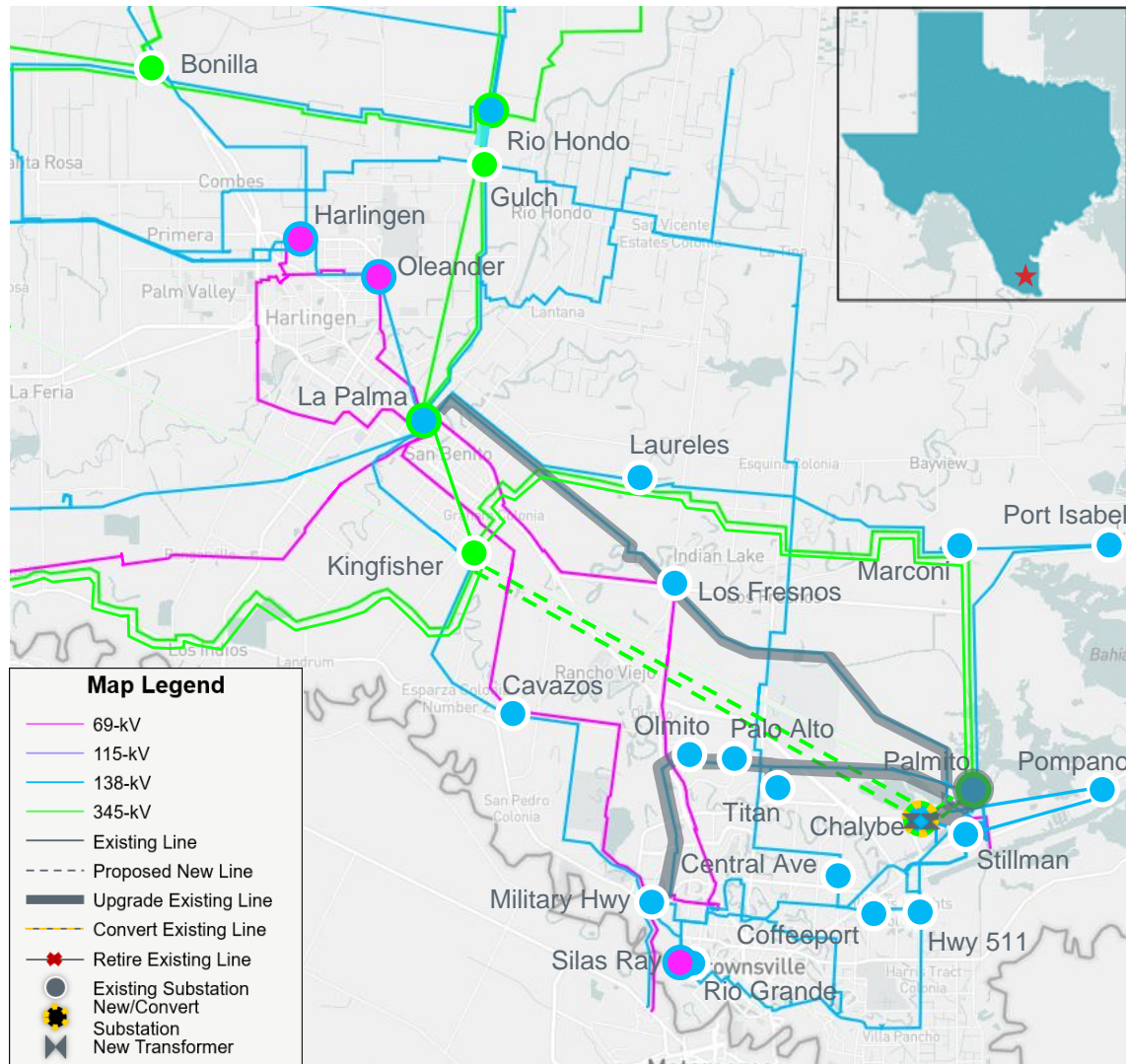
- Install two 345/138-kV autotransformers at Chalybe rated 675-MVA
- Construct a new 22.0-mile 345-kV double circuit transmission line from Chalybe to Kingfisher rated 2668 MVA
- Construct a new 2.0-mile 345-kV double circuit transmission line from Chalybe to Palmito rated 2668 MVA
- Construct a new 1.0-mile 138-kV single circuit transmission line from Chalybe to Stillman rated 987 MVA
- Rebuild the 10.3-mile 138-kV single circuit transmission line from La Palma to Fresno rated 717 MVA
- Rebuild the 12.0-mile 138-kV single circuit transmission line from Fresno to Stillman rated 717 MVA
- Install a +/-300 MVAR STATCOM at Chalybe





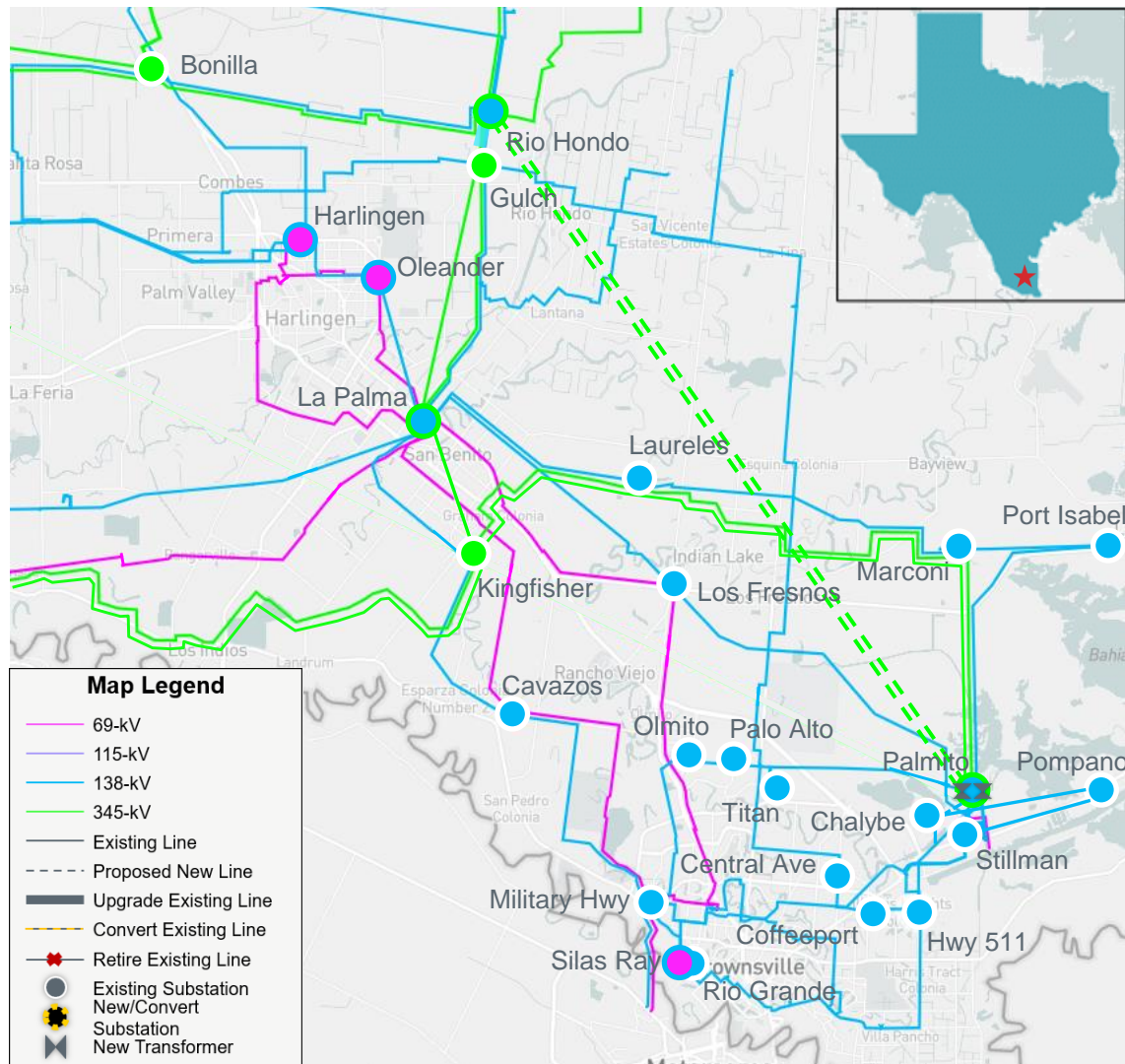
# Option 3 – Alternative Proposed by AEPSC

- Install two 345/138-kV autotransformers at Chalybe rated 675-MVA
- Replace both 345/138-kV 3-winding autotransformers at Palmito with ones rated 675-MVA
- Construct a new 22.0-mile 345-kV double circuit transmission line from Chalybe to Kingfisher rated 2668 MVA
- Rebuild the 10.3-mile 138-kV single circuit transmission line from La Palma to Fresno rated 717 MVA
- Rebuild the 12.0-mile 138-kV single circuit transmission line from Fresno to Stillman rated 717 MVA
- Rebuild the 5.5-mile 138-kV single circuit transmission line from Military to Olmito rated 717 MVA
- Rebuild the 0.4-mile 138-kV single circuit transmission line from Palo Alto to Olmito rated 717 MVA
- Rebuild the 2.5-mile 138-kV single circuit transmission line from Titan to Palo Alto rated 717 MVA
- Rebuild the 7.3-mile 138-kV single circuit transmission line from Titan to Chalybe rated 717 MVA
- Install a +/-300 MVAR STATCOM at Chalybe



# Option 4 – ERCOT Option

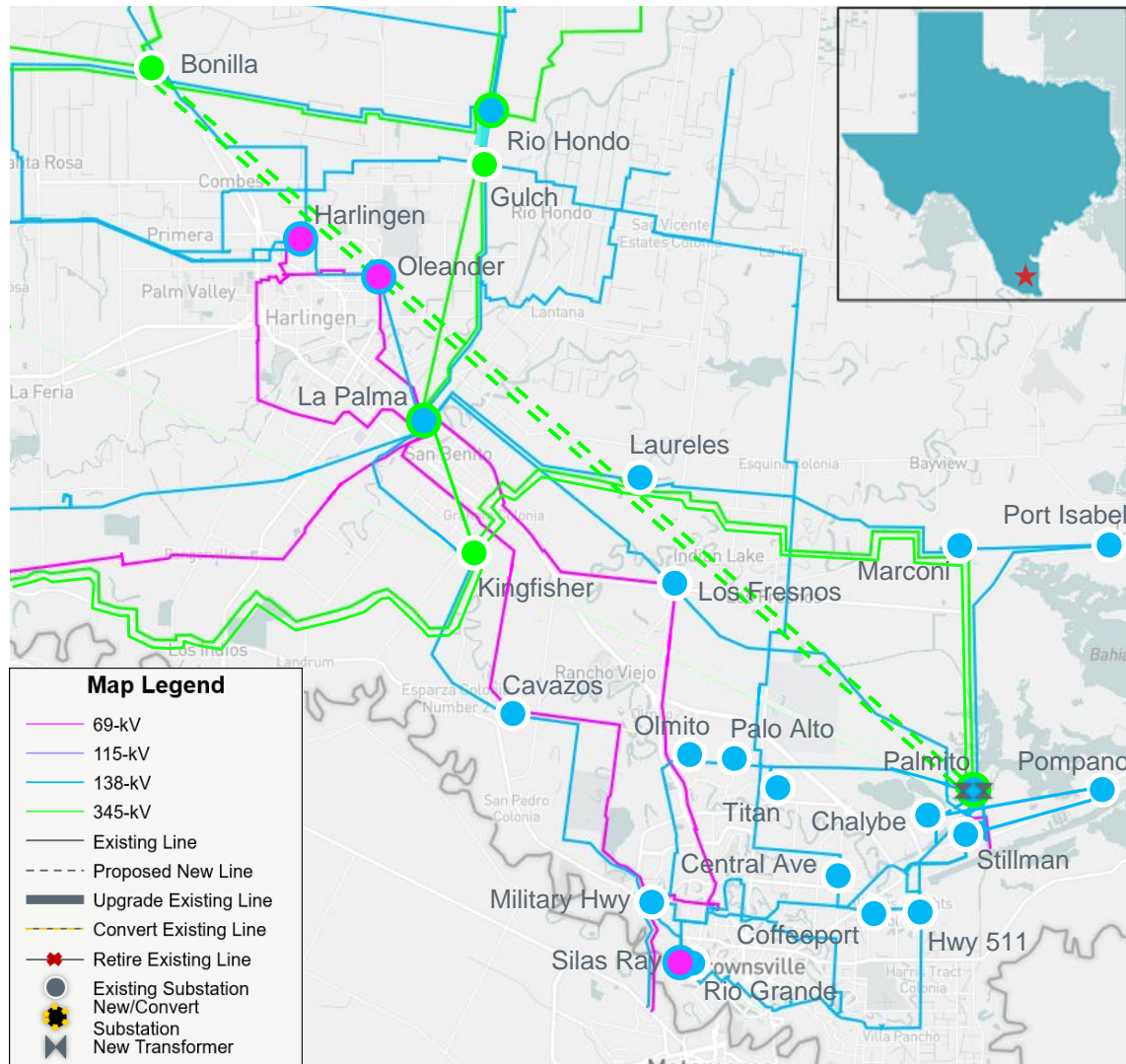
- Install two additional 345/138-kV 3-winding autotransformers at Palmito rated 450-MVA
- Construct a new 29.8-mile 345-kV double circuit transmission line from Palmito to Rio Hondo rated 2668 MVA
- Construct a new 2.0-mile 138-kV single circuit transmission line from Chalybe to Palmito rated 956 MVA
- Construct a new 0.4-mile 138-kV single circuit transmission line from Palmito to Stillman rated 516 MVA
- Install a +/-300 MVAR STATCOM at Chalybe





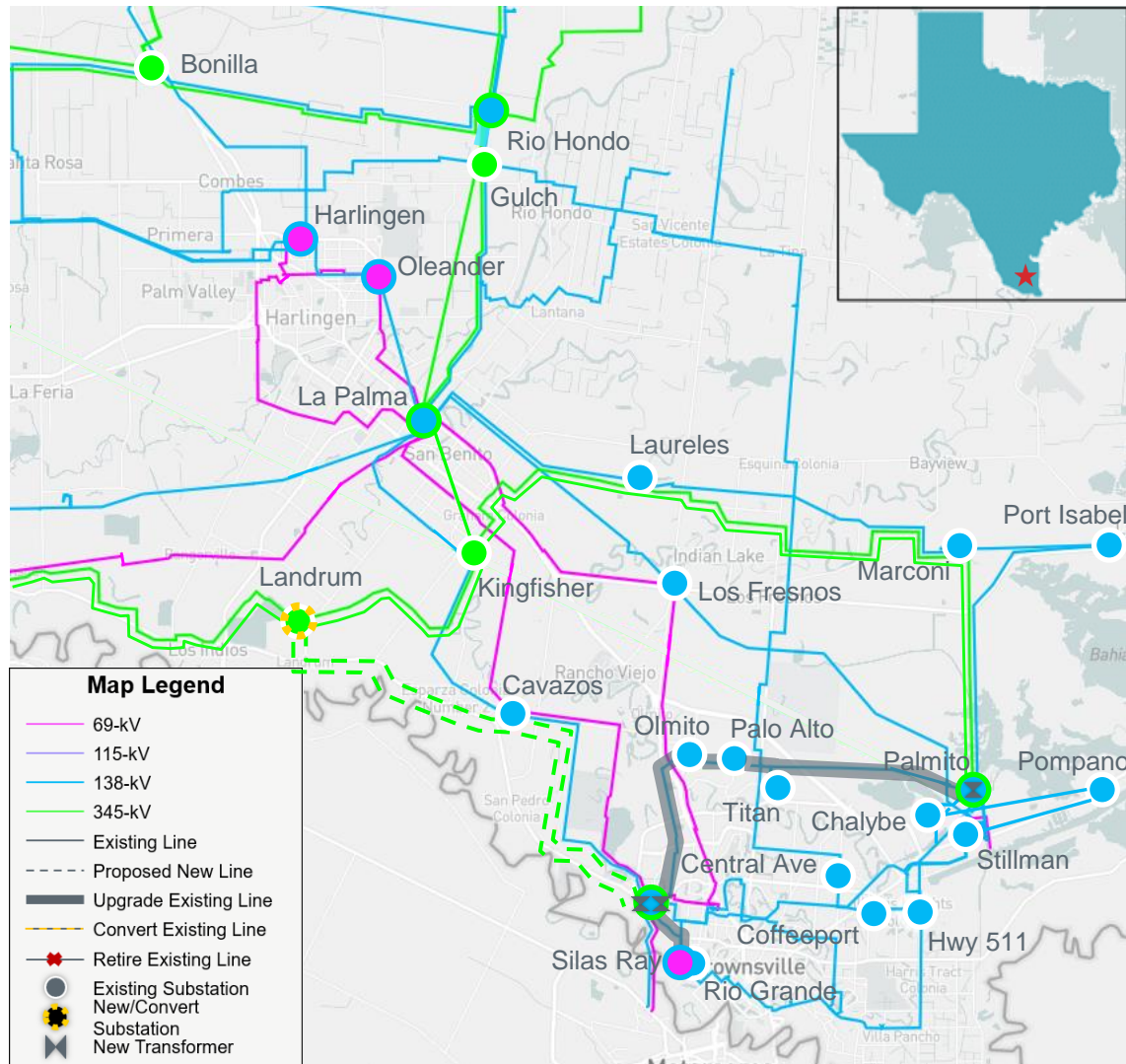
# Option 5 – ERCOT Option

- Install two additional 345/138-kV 3-winding autotransformers at Palmito rated 450-MVA
- Construct a new 39.0-mile 345-kV double circuit transmission line from Palmito to Bonilla rated 2668 MVA
- Construct a new 2.0-mile 138-kV single circuit transmission line from Chalybe to Palmito rated 956 MVA
- Construct a new 0.4-mile 138-kV single circuit transmission line from Palmito to Stillman rated 516 MVA
- Install a +/-300 MVAR STATCOM at Chalybe



# Option 6 – ERCOT Option

- Install two 345/138-kV autotransformers at Military Hwy rated 675 MVA
- Install one additional 345/138-kV 3-winding autotransformer at Palmito rated 450 MVA
- Add a 345-kV substation on the 345-kV double circuit transmission line from North Edinburg to Kingfisher named Landrum
- Construct a new 16.0-mile 345-kV double circuit transmission line from Landrum to Military Hwy rated 2668 MVA
- Construct a new 2.0-mile 138-kV single circuit transmission line from Chalybe to Palmito rated 956 MVA
- Construct a new 1.0-mile 138-kV single circuit transmission line from Chalybe to Stillman rated 987 MVA
- Replace 2 138-kV bus ties at Military Hwy with ones rated 717 MVA
- Rebuild the 5.5-mile 138-kV single circuit transmission line from Military to Olmito rated 717 MVA
- Rebuild the 0.4-mile 138-kV single circuit transmission line from Palo Alto to Olmito rated 717 MVA
- Rebuild the 2.5-mile 138-kV single circuit transmission line from Titan to Palo Alto rated 717 MVA
- Rebuild the 7.3-mile 138-kV single circuit transmission line from Titan to Chalybe rated 717 MVA
- Rebuild the 2.3-mile 138-kV single circuit transmission line from Military Hwy to Silas Ray rated 717 MVA
- Rebuild the 0.6-mile 138-kV single circuit transmission line from Silas Ray to Rio Grande rated 717 MVA
- Install a +/-300 MVAR STATCOM at Chalybe



# Preliminary Results of Reliability Assessment – Short-listed Options

	N-1		G-1 + N-1		X-1 + N-1	
	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations
Option 1	None	None	None	None	None	1
Option 2	None	None	None	None	None	None
Option 3	None	None	None	None	None	1
Option 4	None	None	None	None	None	None
Option 5	None	None	None	None	None	None
Option 6	None	None	None	None	None	None

- Options 2, 4, 5, and 6 are short-listed



# Long-Term Load-Serving Capability Assessment

- Methodology
  - Adjusted load up in substations in the Study Area (Cameron County)
  - Adjusted conforming load down outside of the South weather zone to balance power
- Based on N-1 contingency

Option	Incremental Load Serving Capability (MW)
2	529
4	505
5	519
6	540

# Next Steps and Tentative Timeline

- ERCOT will continue to evaluate options and provide status updates at future RPG meetings
  - ERCOT may perform the following studies
    - Planned maintenance outage 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
  - Generation and Load Scaling Sensitivity Analyses
    - Planning Guide Section 3.1.3(4)
  - Subsynchronous Resonance (SSR) Assessment
    - Nodal Protocol Section 3.22.1.3(2)
  - Cost estimates and feasibility assessments will be requested from the Transmission Service Providers
- Tentative timeline
  - Final recommendation – Q3 2024

*Thank you!*



Stakeholder comments also welcomed through:

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# Appendix A – Transmission Projects Added to Study Case

TPIT No	Project Name	Tier	Project ISD	TSP	County
69463	AEP_TCC_ArroyoInterconnection	Tier 4	Nov-24	AEP TCC	Cameron
73061	Falfurrias to King Ranch: 138 kV Line Rebuild	Tier 4	Nov-26	AEP TCC	Brooks
73359	Vertrees: Construct New Distribution Station	Tier 4	Feb-25	AEP TCC	Hidalgo
73661	New transformer (T2) at BPUB Palo Alto Substation	Tier 4	Mar-24	BPUB	Cameron
76082	Union Carbide: Rebuild 138 kV Station	Tier 4	Jun-26	AEP TCC	Cameron
76214	North Edinburg: 345 kV Reconfigure	Tier 4	Oct-24	AEP TCC	Hidalgo
76574	TexasAg Wind Interconnection	Tier 4	May-25	AEP TCC	Hidalgo
77144	Pompano: New 138 kV Station	Tier 4	Jul-24	AEP TCC	Cameron

## Appendix B – Generation Added to Study Case

GINR	Project Name	Fuel	Project COD	Capacity (MW)	County
19INR0054	Monte Cristo 1 Wind	WIN	08/20/2025	234.5	Hidalgo
24INR0436	Carambola BESS	OTH	05/31/2026	97.43	Hidalgo



## Appendix C – G-1 Generators and X-1 Transformers

G-1 Generators	X-1 Transformers
Silas Ray Unit C9	Palmito – Ckt 1 345/138-kV
Cameron Wind Unit 1	La Palma – Ckt 1 345/138-kV
San Roman Wind Unit 1	Rio Hondo – Ckt 1 345/138-kV
North Edinburg Unit 1 – Partial Steam	