



STEC Ammonia Plant Load Project – ERCOT Independent Review Project Update

Abishek Penti

RPG Meeting
November 11, 2025

Introduction

- STEC submitted the Ammonia Plant Load Project for Regional Planning Group (RPG) review in May 2025.
 - This Tier 2 project is estimated to cost \$65.47 million and will require a Certificate of Convenience and Necessity (CCN)
 - Estimated in-service date (ISD) is June 2028
 - To address the reliability concerns seen by STEC with addition of 300 MW of Ammonia Plant Load
- STEC provided an overview presentation and ERCOT provided the study scope at the June RPG Meeting
 - <https://www.ercot.com/calendar/06172025-RPG-Meeting>
- ERCOT provided status update at the August and October RPG Meeting
 - <https://www.ercot.com/calendar/08262025-RPG-Meeting>
 - <https://www.ercot.com/calendar/10282025-RPG-Meeting>
- This project is currently under ERCOT Independent Review (EIR)

Recap – Study Assumptions – Load, Reserve, Transmission & Generation

- 2024 Regional Transmission Planning (RTP) 2029 summer peak case was used as the start case
- Load in study area
 - Loads in study area were updated to create the study base case
- Reserve
 - Reserve levels are consistent with the 2024 RTP
- Transmission
 - See Appendix A for a list of transmission projects added
 - See Appendix B for a list of RTP placeholder projects that were removed
- Generation
 - See Appendix C for a list of generation projects added

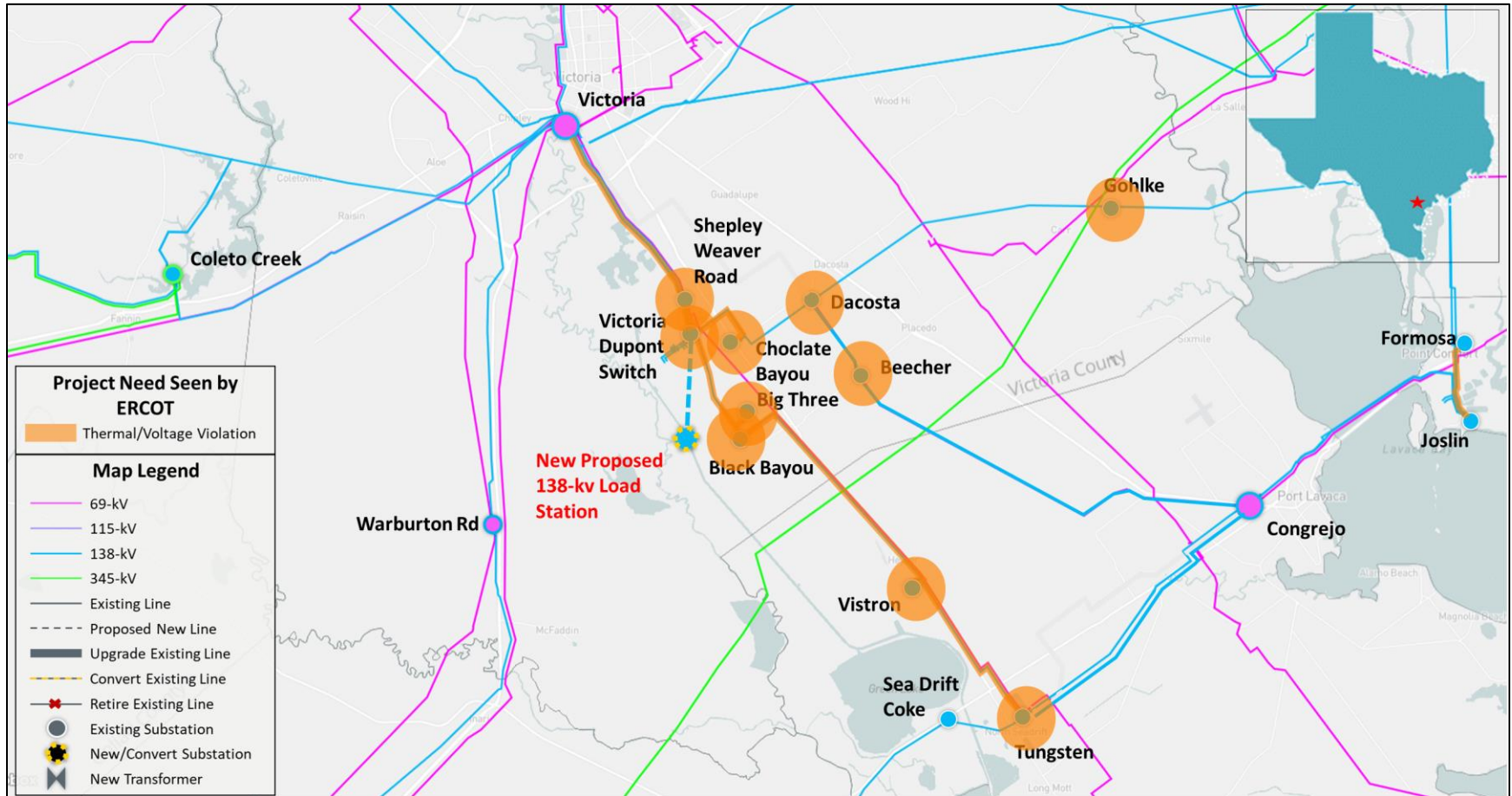
Recap – Preliminary Results of Reliability Assessment – Need Analysis

- ERCOT conducted steady-state load flow analysis for the study base case according to the NERC TPL-001-5.1 and ERCOT Planning Criteria to identify project need

Contingency Category	Voltage Violations	Thermal Violations	Unsolved Power Flow
N-0 (P0)	None	None	None
N-1 (P1, P2-1, P7)	None	2	None
G-1+N-1 (P3)*	24	8	None
X-1+N-1 (P6-2)*	None	1	None

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

Recap – Study Area Map with Violations Seen by ERCOT



Recap – Preliminary Results of Reliability Assessment – Options

	N-1		X-1+N-1*		G-1+N-1**	
Option	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations
1	None	None	None	None	None	None
2	None	None	None	None	None	None
2A	None	None	None	None	None	None
2B	None	None	None	None	None	None
3	None	None	None	None	3	None
4	None	None	None	None	None	None
5	None	None	None	None	None	None
5A	None	None	None	None	1	None

* G-1: Victoria Port Unit and Formosa Unit

** X-1: Coletto Creek 345/138-kV transformer

Recap – Preliminary Results of Planned Maintenance Outage Analysis – Options

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

Option	Thermal Violations	Voltage Violations	Unsolvable Contingencies
1	None	None	None
2	None	None	None
2A	None	None	None
2B	3	None	None
4	None	None	None
5	None	None	None

- Option 1, Option 2, Option 2A, Option 4 and Option 5 are short-listed for further evaluation.

Long-Term Load-Serving Capability Assessment

- Adjusted load up in substations in the Study Area
- Adjusted conforming load down outside of the Coast Weather Zones to balance power
- Based on N-1 contingency limits

Option	Incremental Load-Serving Capability (~MW)
1	375
2	175
2A	125
4	375
5	75

Preliminary Cost Estimate and Feasibility Assessment

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

Option	Cost Estimates (~\$M)	CCN Required (~Miles)	Feasibility
1	117.38	Yes (11.1)	Yes
2	117.52	Yes (23.0)	Yes
2A	132.38	Yes (22.6)	Yes
4	96.66	Yes (12.5)	No
5	154.54	Yes (11.4)	Yes

- Option 1, Option 2, Option 2A and Option 5 are further short-listed for additional comparison.

Comparison of Short-Listed Options

	Option 1	Option 2	Option 2A	Option 5
Meets ERCOT and NERC Reliability Criteria	Yes	Yes	Yes	Yes
Improves Long-Term Load-Serving Capability	Yes (Best)	Yes	Yes	Yes
Requires CCN (~miles)	Yes (11.1)	Yes (23.0)	Yes (22.6)	Yes (11.4)
Project Feasibility	Yes	Yes	Yes	Yes
Cost Estimate* (~\$M)	117.38	117.52	132.38	154.54

*Cost estimates were provided by the TSPs

ERCOT Preferred Option

- Option 1 is selected as the preferred option because it
 - Addresses NERC and ERCOT reliability issues
 - Significantly improves Long-Term Load-Serving Capability compared to the least expensive options
 - Requires the least amount of CCN mileage of all the options
- This project will be reclassified as a Tier 1 project due to the revised cost estimate exceeding \$100 million.

Next Steps and Tentative Timeline

- Generation Addition and Load Scaling Sensitivity Analyses
 - Planning Guide Section 3.1.3(4)
- Subsynchronous Resonance (SSR) Assessment
 - Nodal Protocol Section 3.22.1.3(2)
- 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
 - Final recommendation – Q4 2025

Thank you!



Stakeholder comments also welcomed through:

Abishek.Penti@ercot.com

Robert.Golen@ercot.com

Appendix A – Transmission Projects

- List of transmission projects added to study base case

RPG/TPIT No	Project Name	Tier	Project ISD	TSP
25RPG021	Victoria to Warburton 138-kV Line Rebuild Project	Tier 3	Sep-28	AEP TCC
82829	New Fuhman Substation	Tier 4	Apr-25	STEC
69473	Jaguar: Construct New Distribution Station	Tier 4	Jul-25	AEP TCC
76788	Upgrade Victoria-Rayburn	Tier 4	Dec-25	STEC
69489	Shepley: Construct New Distribution Station	Tier 4	Feb-26	AEP TCC
81647	Dupont Switch to Sardinia: Construct New 138 kV Line	Tier 4	Jun-26	AEP TCC
76818	Upgrade Rayburn Auto Station	Tier 4	Oct-26	STEC
87029	Chocolate Bayou to Portside Energy Center: Construct New 138 kV Line	Tier 4	Dec-26	AEP TCC
87027	Black Bayou: Construct New 138 kV Terminal	Tier 4	Apr-27	AEP TCC
76777	Rebuild Nursery-El Toro	Tier 4	May-27	STEC
81556	Haber: Construct New 345 kV Terminal	Tier 4	May-27	AEP TCC
73441	Dupont Switch to Joslin: Rebuild 138 kV Line	Tier 4	May-27	AEP TCC
81548	Haber: Construct New 345 kV Station	Tier 4	May-27	AEP TCC
81553	Haber: Construct New 345 kV Terminal	Tier 4	May-27	AEP TCC

Appendix B – Transmission Projects

- List of transmission projects removed from the study base case

TPIT No	Project Name	County
2024-CS2	Victoria (8169) to Refugio (8410) 69-kV Line Upgrades	Victoria, Refugio
2024-C12	Sam Rayburn Switchyd (5500) to Warburton Road Switching Station (5605) 69-kV Line Upgrades	Victoria
2024-C15	Victoria Area 138-kV Line Upgrades and Furhman Switch (5506) to Magruder (8194) 138-kV Line Addition	Victoria
2024-C19	Joslin (8140) to Gohlke (8141) to Dacosta (8722) 138-kV Line Upgrades	Calhoun, Victoria

Appendix C – New Generation Projects to Add

GINR	Project Name	Fuel	Projected COD	Max Capacity (~MW)	County
24INR0093	Oriana Solar	SOL	08/08/2025	181.0	Victoria
24INR0109	Oriana BESS	OTH	06/15/2026	60.3	Victoria
24INR0425	Two Brothers ESS	OTH	04/07/2027	152.0	Victoria

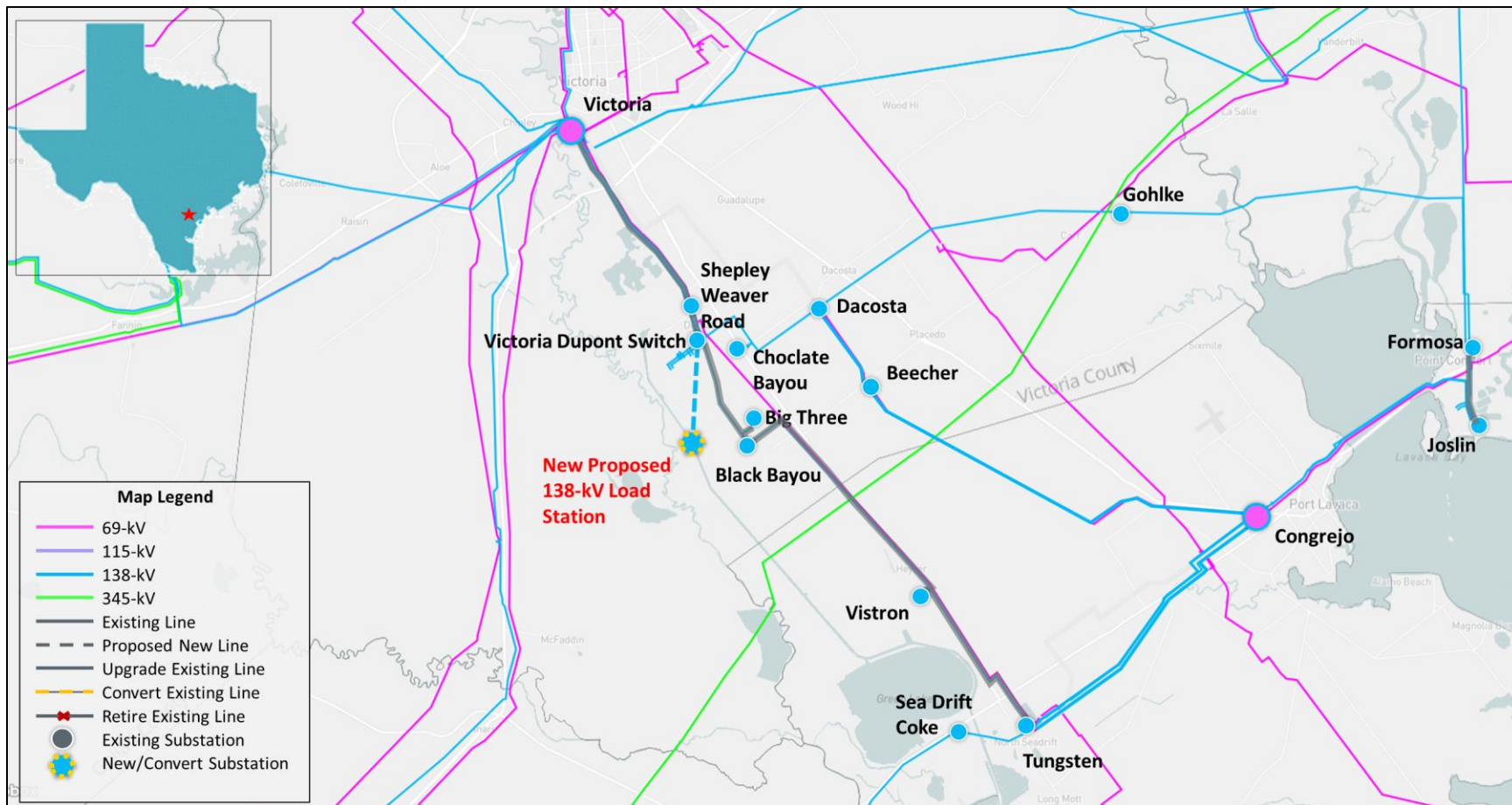
Appendix D – G-1 Generators and X-1 Transformers

G-1 Generators	X-1 Transformers
Victoria Port Units	Coletto Creek – Ckt 1 345/138-kV
Formosa Units	

Option 1 – STEC Proposed Option

- Serve the new large load confirmed by Transmission Service Provider (TSP) Attestation Letter by connecting STEC's new load serving station to AEP's 138-kV Dupont Switching station via a 138-kV transmission line, with normal and emergency ratings of at least 427 MVA and 478 MVA, respectively, which will require a new ROW, approximately 3.4-mile;
- Rebuild the existing Victoria Plant to Shepley to Dupont 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 7.66-mile;
- Rebuild the existing Victoria Plant to Dupont 138-kV transmission line ckt2 with normal and emergency ratings of at least 485 MVA, approximately 7.66-mile;
- Remove the double-circuit section of the Victoria Plant to Shepley and Victoria Plant to Dupont circuits (by rebuilding the two circuits on separate structures) to eliminate the NERC P7/ERCOT_1 (common tower outage) events. This would require a new ROW;
- Rebuild the existing Formosa to Joslin 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 2.41-mile; and
- Rebuild the existing Tungsten to Vistrion to Black Bayou to Big Three to Dupont 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 21.11-mile.

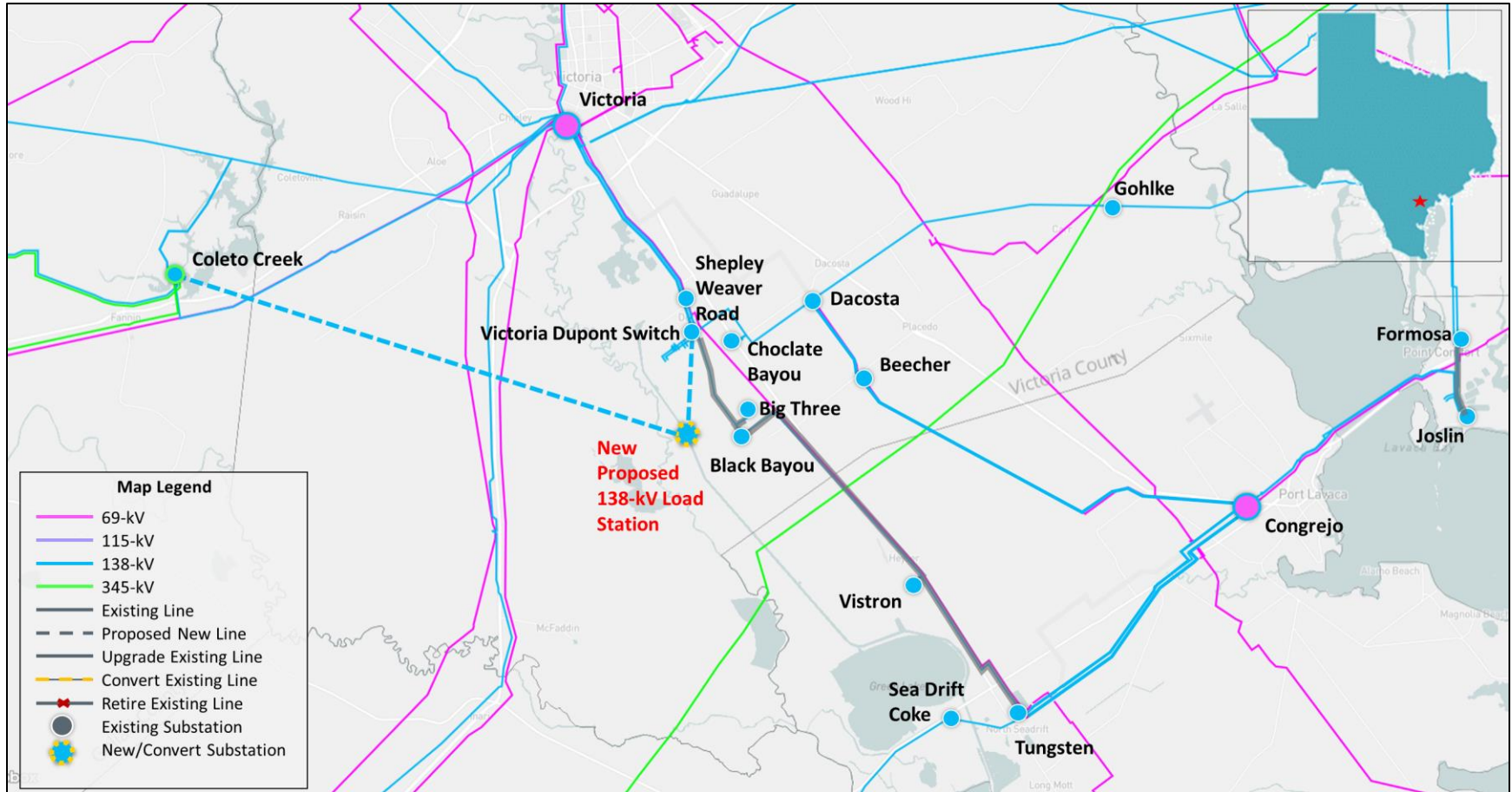
Option 1 – STEC Proposed Option



Option 2 – Modified STEC Alternative Option

- Serve the new large load confirmed by Transmission Service Provider (TSP) Attestation Letter by connecting STEC's new load serving station to AEP's 138-kV Dupont Switching station via a 138-kV transmission line, with normal and emergency ratings of at least 427 MVA and 478 MVA, respectively, which will require a new ROW, approximately 3.4-mile;
- Construct a new 138-kV transmission line from STEC's load serving station to Coletto Creek station on single-circuit capable structures using a conductor with normal and emergency ratings of at least 427 MVA and 478 MVA, approximately 19.55-mile. This will require a new ROW;
- Rebuild the existing Formosa to Joslin 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 2.41-mile; and
- Rebuild the existing Tungsten to Vistron to Black Bayou to Big Three to Dupont 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 21.11-mile.

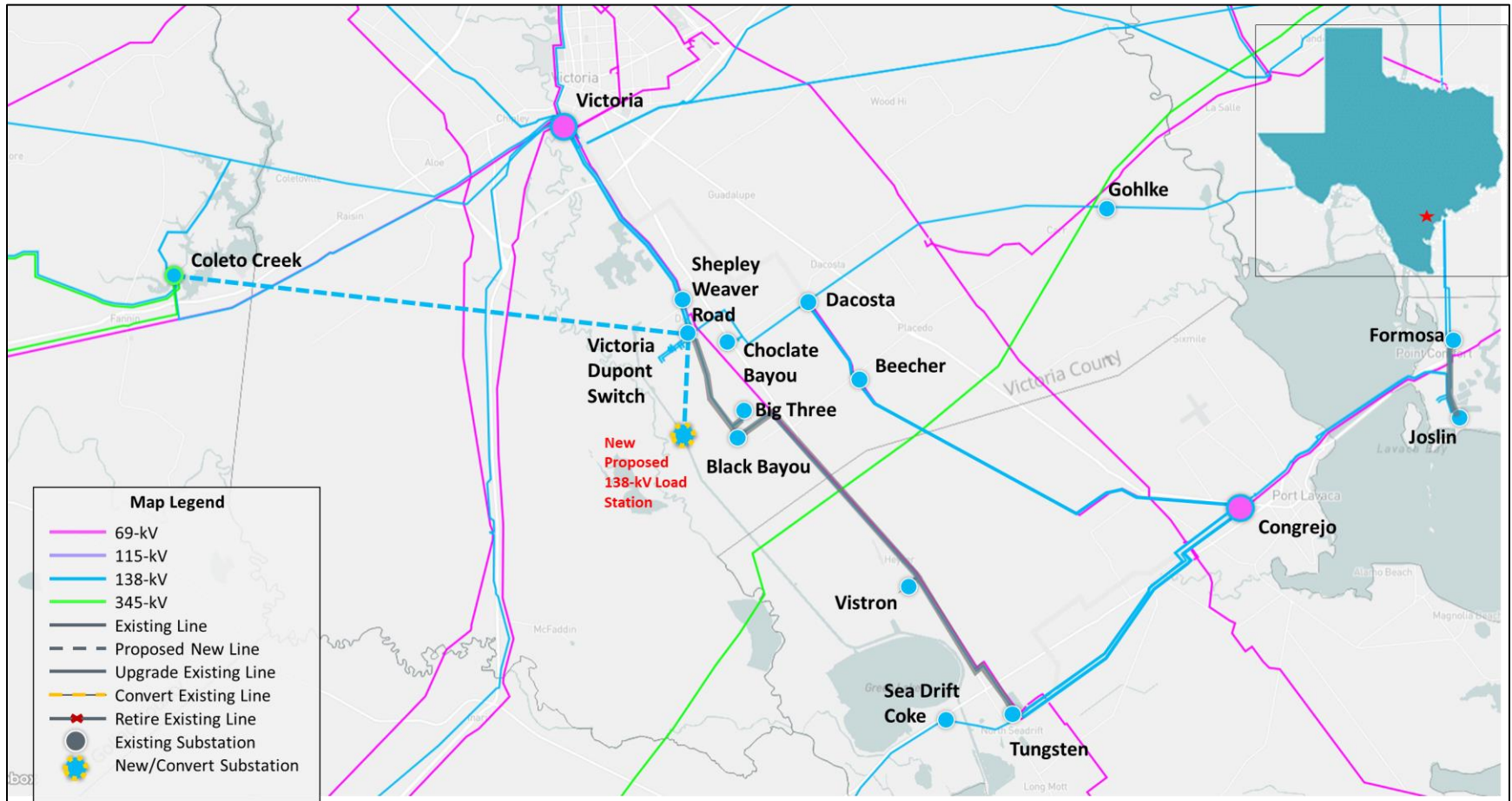
Option 2 – Modified STEC Alternative Option



Option 2A – AEP Alternative Option

- Serve the new large load confirmed by Transmission Service Provider (TSP) Attestation Letter by connecting STEC's new load serving station to AEP's 138-kV Dupont Switching station via a 138-kV transmission line, with normal and emergency ratings of at least 427 MVA and 478 MVA, respectively, which will require a new ROW, approximately 3.4-mile;
- Construct a new 138-kV transmission line from Victoria Dupont Switch to Coletto Creek station on single-circuit capable structures using a conductor with normal and emergency ratings of at least 427 MVA and 478 MVA, approximately 19.20-mile. This will require a new ROW;
- Rebuild the existing 138-kV Formosa to Joslin 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 2.41-mile; and
- Rebuild the existing Tungsten to Vistron to Black Bayou to Big Three to Dupont 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 21.11-mile.

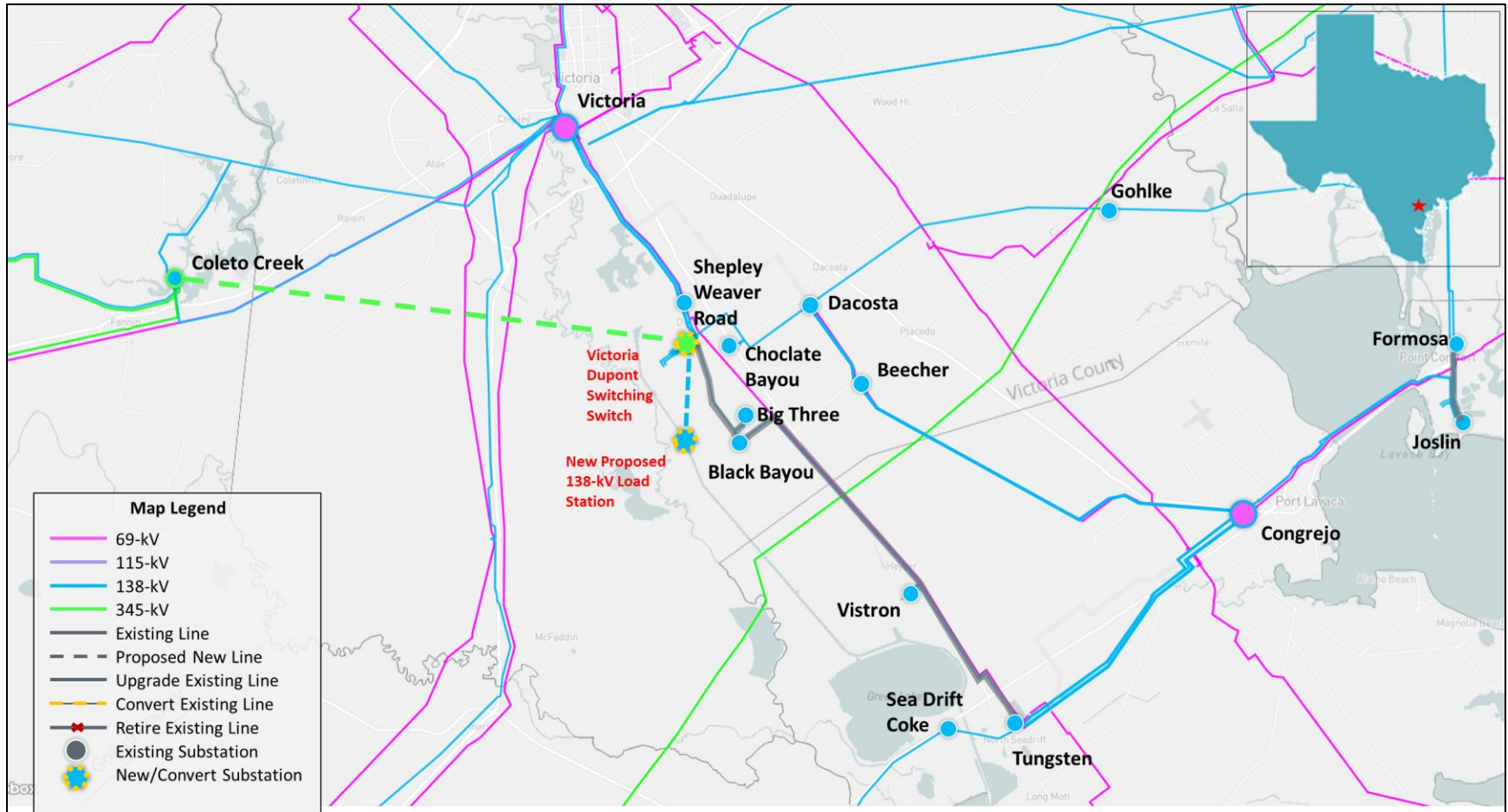
Option 2A – AEP Alternative Option



Option 2B – AEP Alternative Option

- Serve the new large load confirmed by Transmission Service Provider (TSP) Attestation Letter by connecting STEC's new load serving station to AEP's 138-kV Dupont Switching station via a 138-kV transmission line, with normal and emergency ratings of at least 427 MVA and 478 MVA, respectively, which will require a new ROW, approximately 3.4-mile;
- Convert the existing Victoria Dupont Station to a 345/138-kV sub-station;
- Install two 345/138-kV autotransformers at the Victoria Dupont 345/138-kV station with a normal and emergency ratings of 675 MVA;
- Construct a new 345-kV transmission line from Victoria Dupont Switch to Coletto Creek station on single-circuit capable structures using a conductor with normal and emergency ratings of at least 1316 MVA and 1423 MVA, approximately 19.20-mile. This will require a new ROW;
- Rebuild the existing 138-kV Formosa to Joslin 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 2.41-mile; and
- Rebuild the existing Tungsten to Vistrion to Black Bayou to Big Three to Dupont 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 21.11-mile.

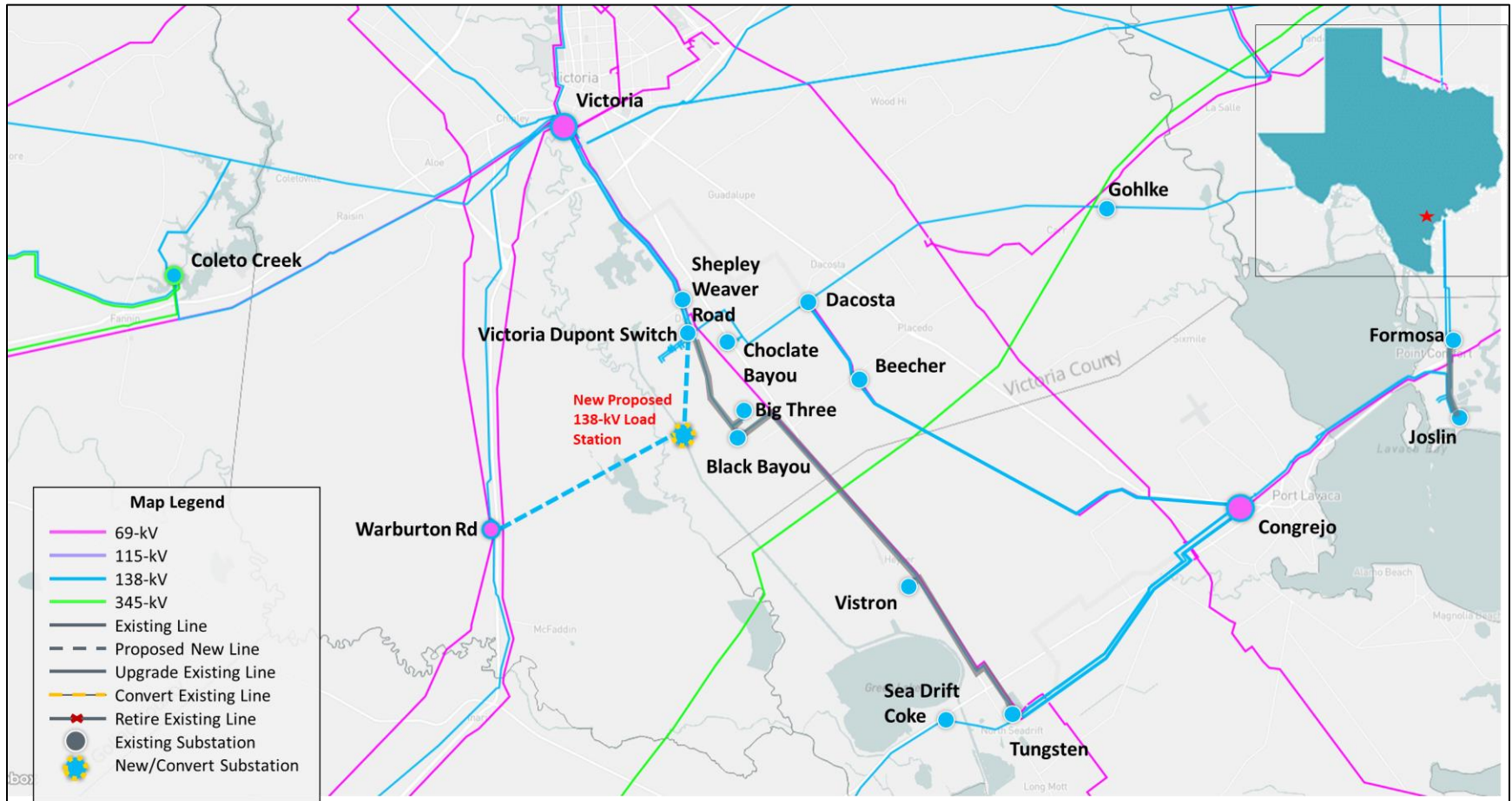
Option 2B – AEP Alternative Option



Option 3 – Modified STEC Alternative Option

- Serve the new large load confirmed by Transmission Service Provider (TSP) Attestation Letter by connecting STEC's new load serving station to AEP's 138-kV Dupont Switching station via a 138-kV transmission line, with normal and emergency ratings of at least 427 MVA and 478 MVA, respectively, which will require a new ROW, approximately 3.4-mile;
- Construct a new 138-kV transmission line from STEC's load serving station to Warburton Road station on single-circuit capable structures using a conductor with normal and emergency ratings of at least 427 MVA and 478 MVA, approximately 10.35-mile. This will require a new ROW; and
- Rebuild the existing 138-kV Formosa to Joslin 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 2.41-mile; and
- Rebuild the existing Tungsten to Vistron to Black Bayou to Big Three to Dupont 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 21.11-mile.

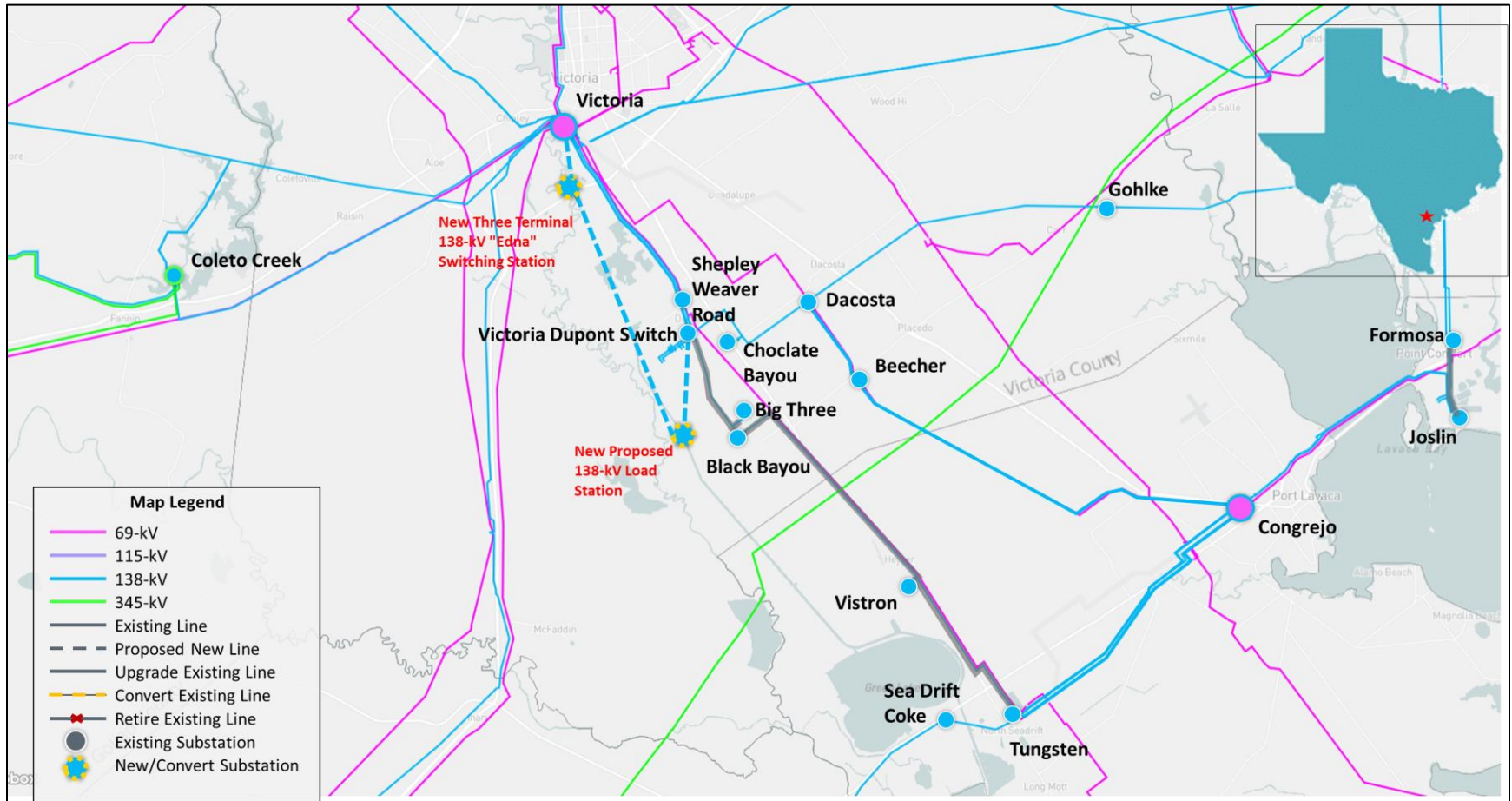
Option 3 – Modified STEC Alternative Option



Option 4 – Modified STEC Alternative Option

- Serve the new large load confirmed by Transmission Service Provider (TSP) Attestation Letter by connecting STEC's new load serving station to AEP's 138-kV Dupont Switching station via a 138-kV transmission line, with normal and emergency ratings of at least 427 MVA and 478 MVA, respectively, which will require a new ROW, approximately 3.4-mile;
- Construct a new 3-terminal Edna 138-kV switching station, approximately 1-mile from Victoria station;
- Construct a new 138-kV transmission line from the existing Victoria station to proposed Edna station on single-circuit capable structures using a conductor with normal and emergency ratings of at least 427 MVA and 478 MVA, approximately 1-mile. This will require a new ROW;
- Construct a new 138-kV transmission line from STEC's load serving station to proposed Edna station on single-circuit capable structures using a conductor with normal and emergency ratings of at least 427 MVA and 478 MVA, approximately 8.05-mile. This will require a new ROW; and
- Rebuild the existing 138-kV Formosa to Joslin 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 2.41-mile; and
- Rebuild the existing Tungsten to Vistron to Black Bayou to Big Three to Dupont 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 21.11-mile.

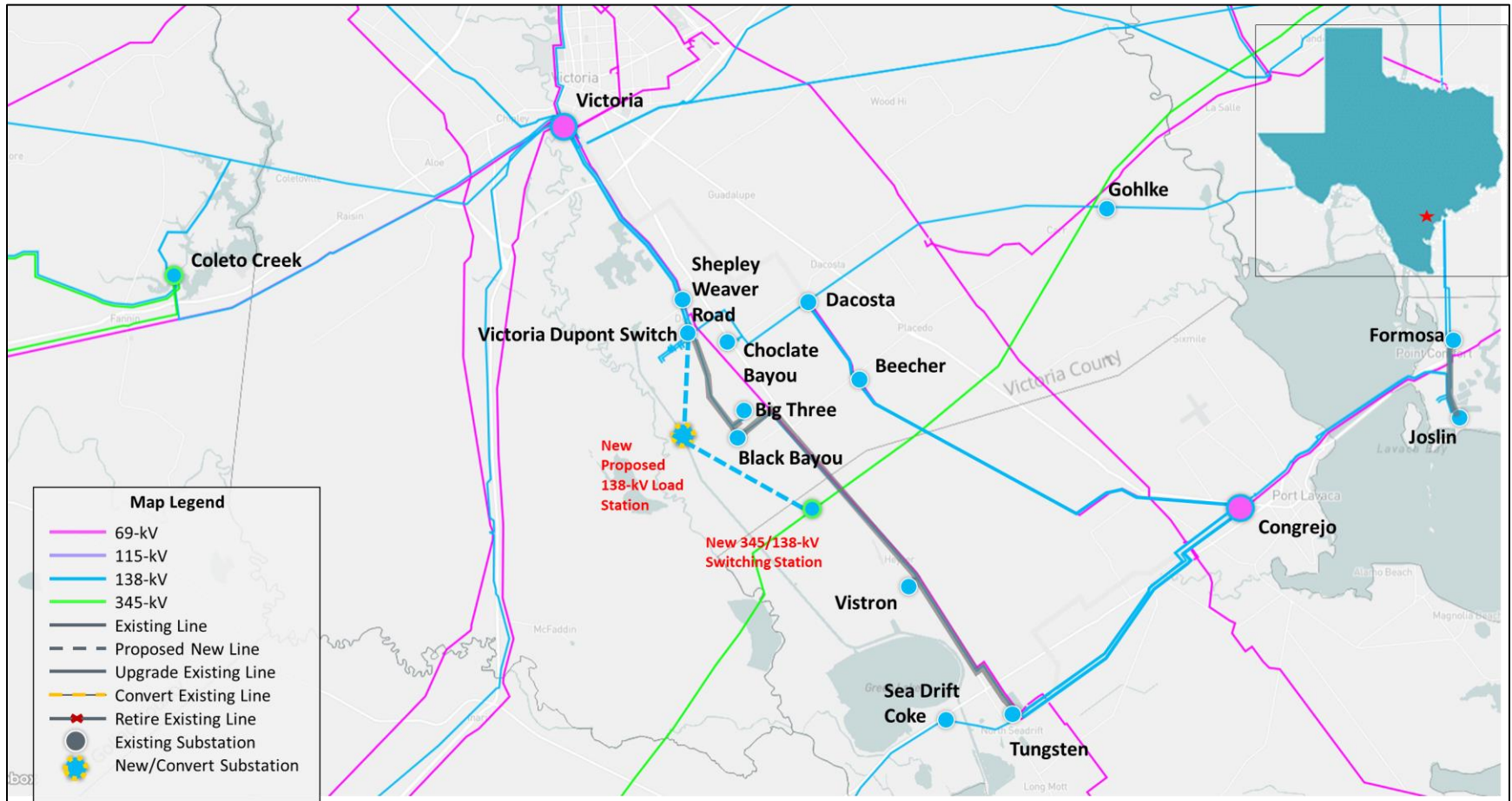
Option 4 – Modified STEC Alternative Option



Option 5 – Modified STEC Alternative Option

- Serve the new large load confirmed by Transmission Service Provider (TSP) Attestation Letter by connecting STEC's new load serving station to AEP's 138-kV Dupont Switching station via a 138-kV transmission line, with normal and emergency ratings of at least 427 MVA and 478 MVA, respectively, which will require a new ROW, approximately 3.4-mile;
- Construct a new 345/138-kV substation on Angstrom – STP 345-kV transmission line, approximately 54.6-mile from Angstrom station;
- Install two 345/138-kV autotransformers at the new 345/138-kV station with a normal and emergency ratings of 675 MVA;
- Construct a new 138-kV transmission line from STEC's load serving station to new 345/138-kV station on single-circuit capable structures using a conductor with normal and emergency ratings of at least 427 MVA and 478 MVA, approximately 8-mile. This will require a new ROW;
- Rebuild the existing 138-kV Formosa to Joslin 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 2.41-mile; and
- Rebuild the existing Tungsten to Vistron to Black Bayou to Big Three to Dupont 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 21.11-mile.

Option 5 – Modified STEC Alternative Option



Option 5A – ERCOT Option

- Serve the new large load confirmed by Transmission Service Provider (TSP) Attestation Letter by connecting STEC's new load serving station to AEP's 138-kV Dupont Switching station via a 138-kV transmission line, with normal and emergency ratings of at least 427 MVA and 478 MVA, respectively, which will require a new ROW, approximately 3.4-mile;
- Install two 345/138-kV autotransformers at the Victoria Dupont 345/138-kV station with a normal and emergency ratings of 675 MVA;
- Construct a new 345-kV substation on Angstrom – STP 345-kV transmission line, approximately 54.6-mile from Angstrom station;
- Construct a new 345-kV transmission line from Victoria Dupont 345-kV terminal to new 345-kV substation on single-circuit capable structures using a conductor with normal and emergency ratings of at least 1316 MVA and 1423 MVA, approximately 9-mile. This will require a new ROW;
- Rebuild the existing 138-kV Formosa to Joslin 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 2.41-mile; and
- Rebuild the existing Tungsten to Vistrion to Black Bayou to Big Three to Dupont 138-kV transmission line with normal and emergency ratings of at least 485 MVA, approximately 21.11-mile.

Option 5A – ERCOT Option

