STEC Ammonia Plant Load Project – ERCOT Independent Review Project Update

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RPG Meeting
December 16, 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, October and November RPG Meeting
  - https://www.ercot.com/calendar/08262025-RPG-Meeting
  - https://www.ercot.com/calendar/10282025-RPG-Meeting
  - https://www.ercot.com/calendar/11112025-RPG-Meeting-_-Webex
- This project is currently under ERCOT Independent Review (EIR)

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

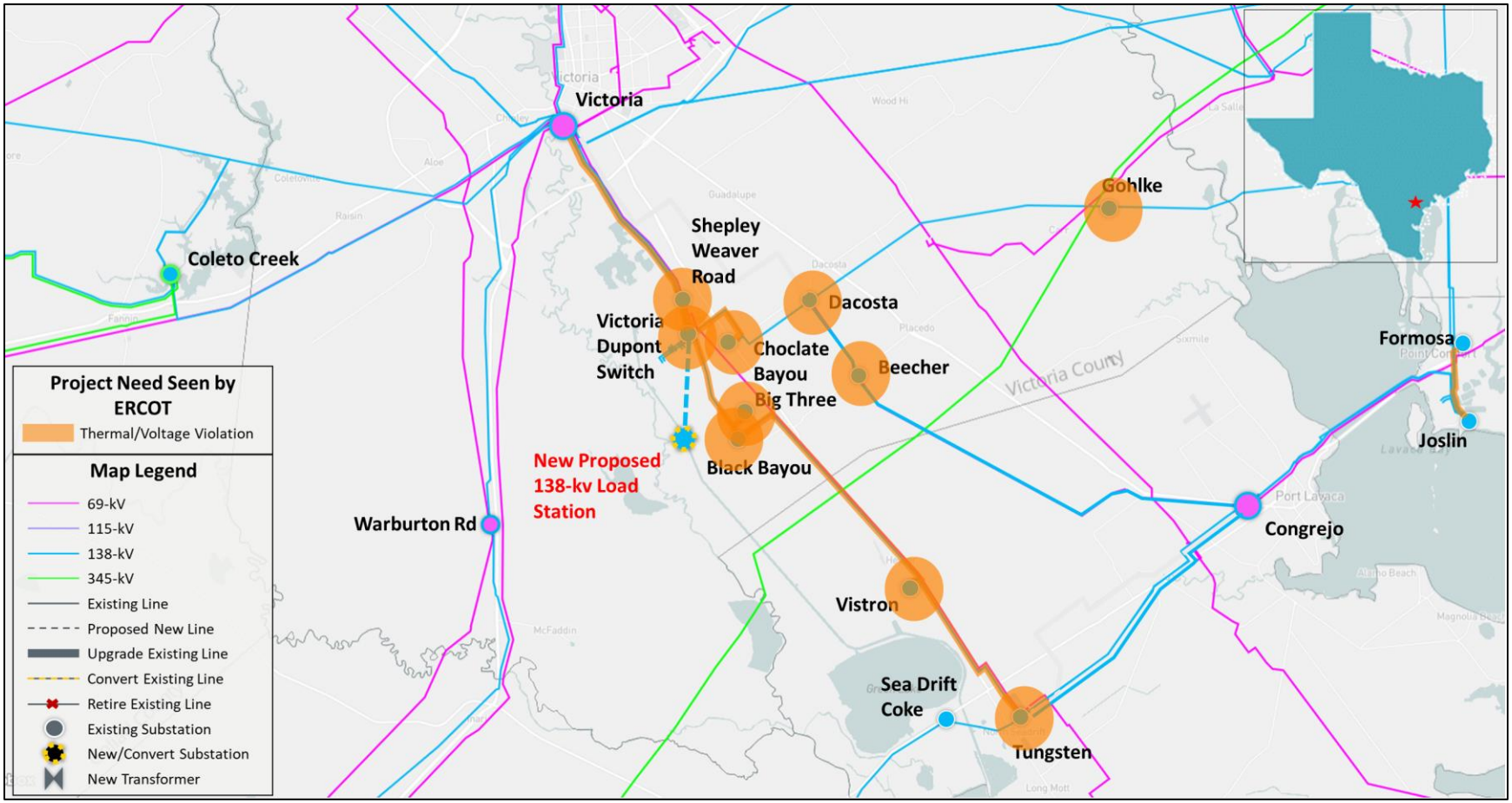
Results of Reliability Assessment – Need Analysis

- 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

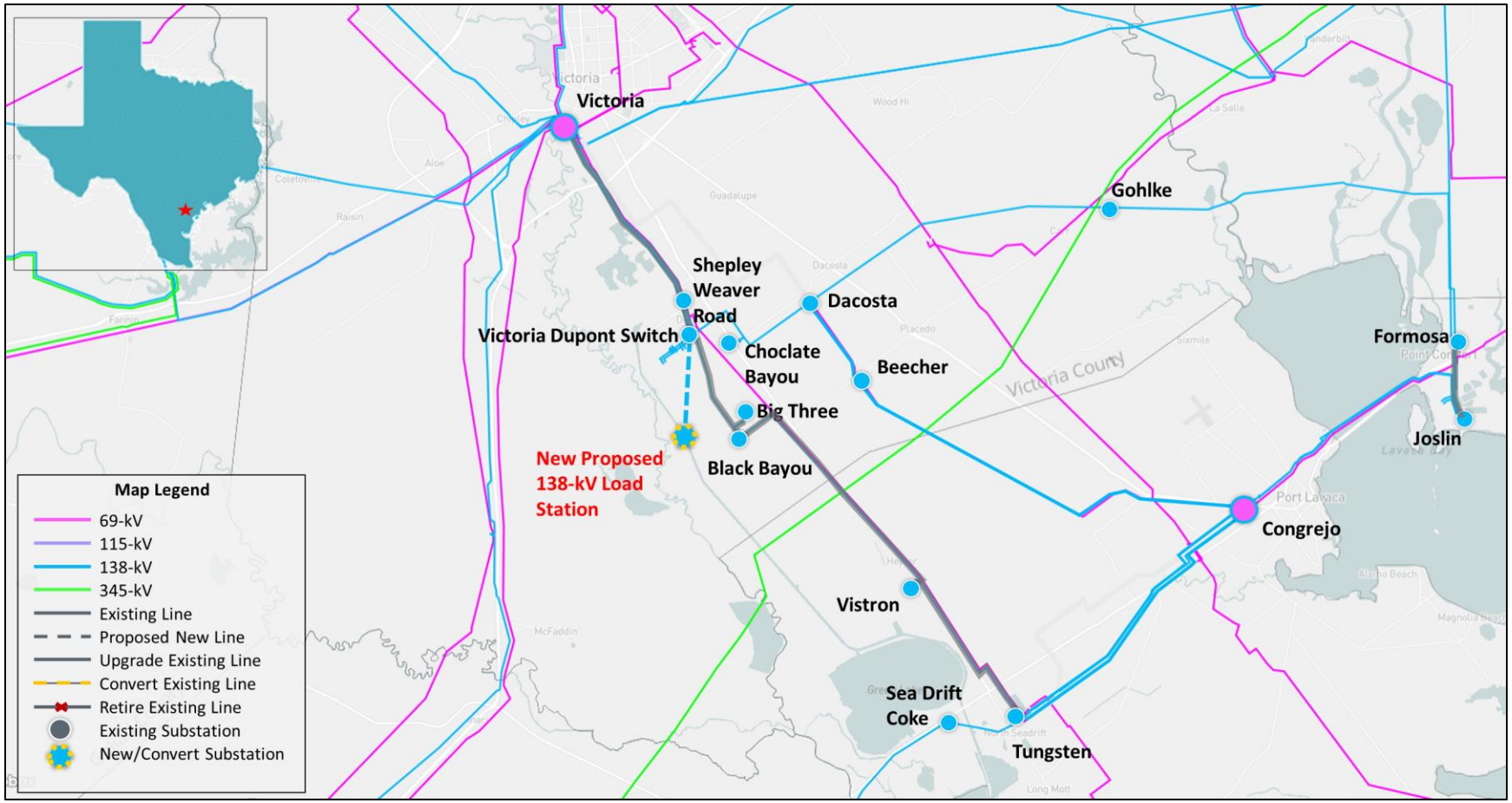
Study Area Map with Violations Seen by ERCOT



Option 1 – STEC Proposed Option

- Connect the new large load confirmed by Transmission Service Provider (TSP) Attestation Letter 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 right of way (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 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.

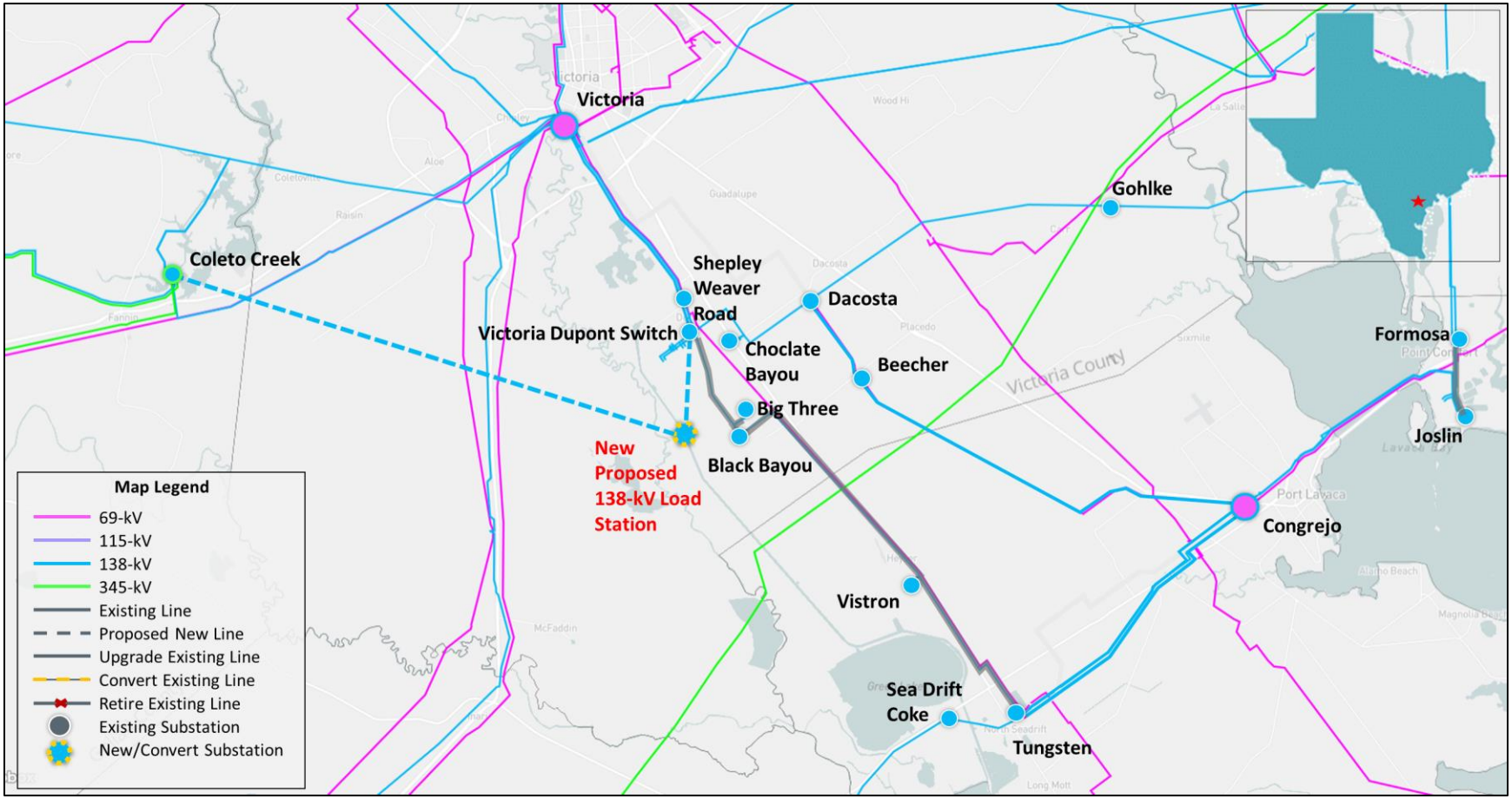
Option 1 – STEC Proposed Option



Option 2 – Modified STEC Alternative Option

- Connect the new large load confirmed by Transmission Service Provider (TSP) Attestation Letter 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 the proposed load to Coleto Creek station on single-circuit capable structures using a conductor with normal and emergency ratings of at least 427 MVA and 478 MVA, respectively, which will require a new ROW, approximately 19.55-mile;
- 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.

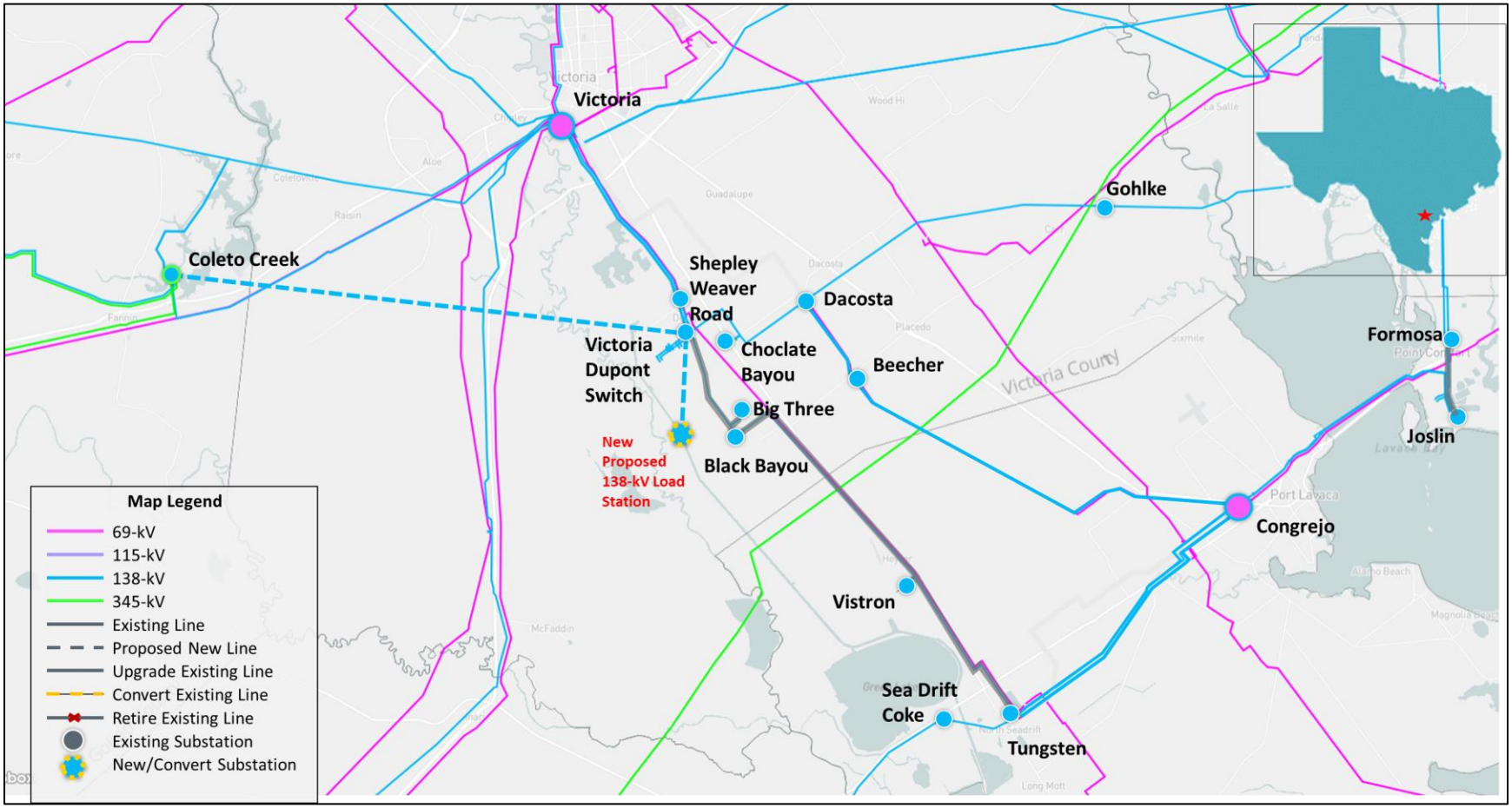
Option 2 – Modified STEC Alternative Option



Option 2A – AEP Alternative Option

- Connect the new large load confirmed by Transmission Service Provider (TSP) Attestation Letter 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 Coleto Creek station on single-circuit capable structures using a conductor with normal and emergency ratings of at least 427 MVA and 478 MVA, respectively, which will require a new ROW, approximately 19.20-mile;
- 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.

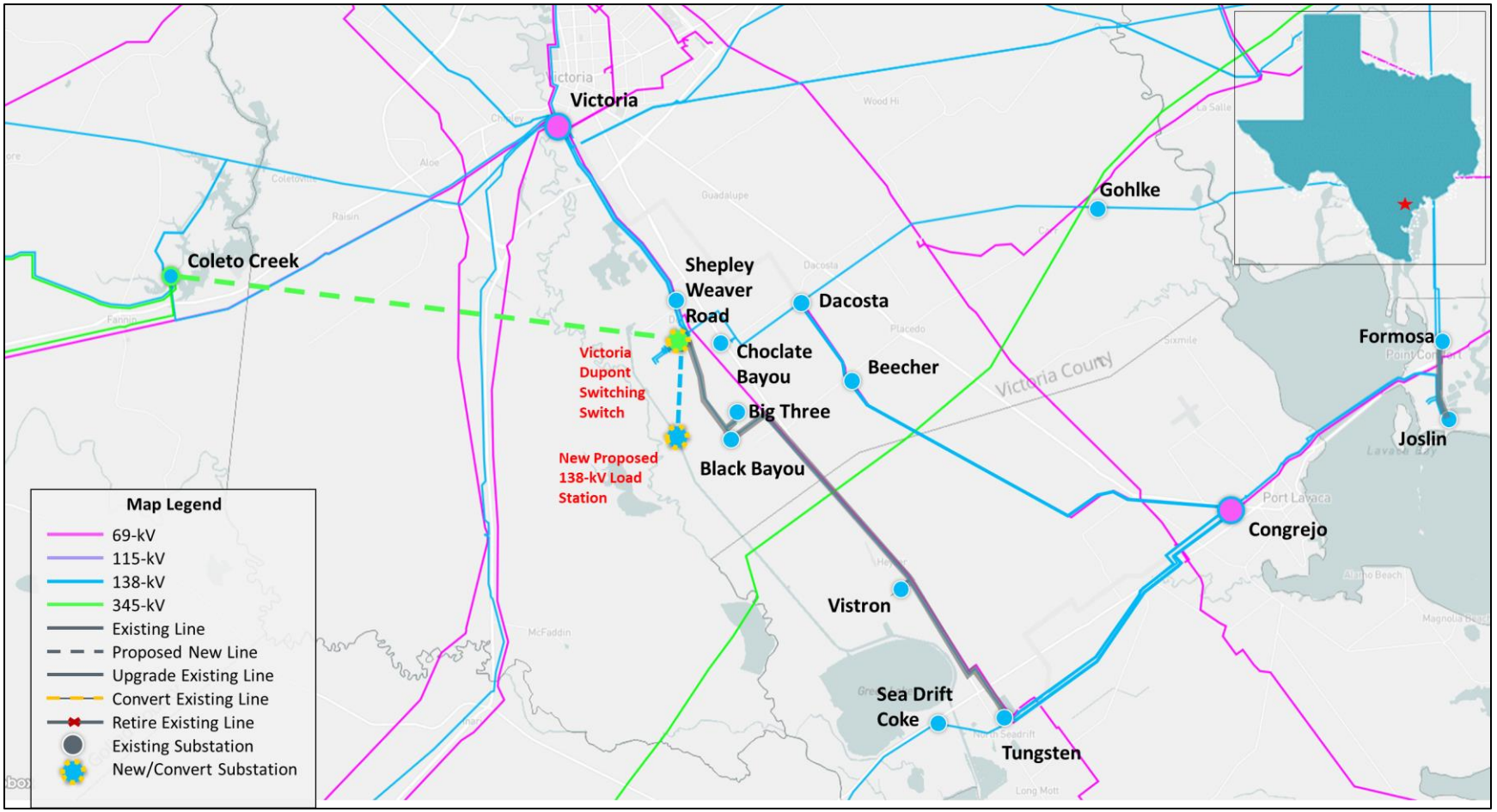
Option 2A – AEP Alternative Option



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 Coleto Creek station on single-circuit capable structures using a conductor with normal and emergency ratings of at least 1316 MVA and 1423 MVA, respectively, which will require a new ROW, approximately 19.20-mile;
- Rebuild the existing 138-kV Formosa to Joslin 138-kV transmission line with normal and emergency ratings of at least 485 MVA, respectively, 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.

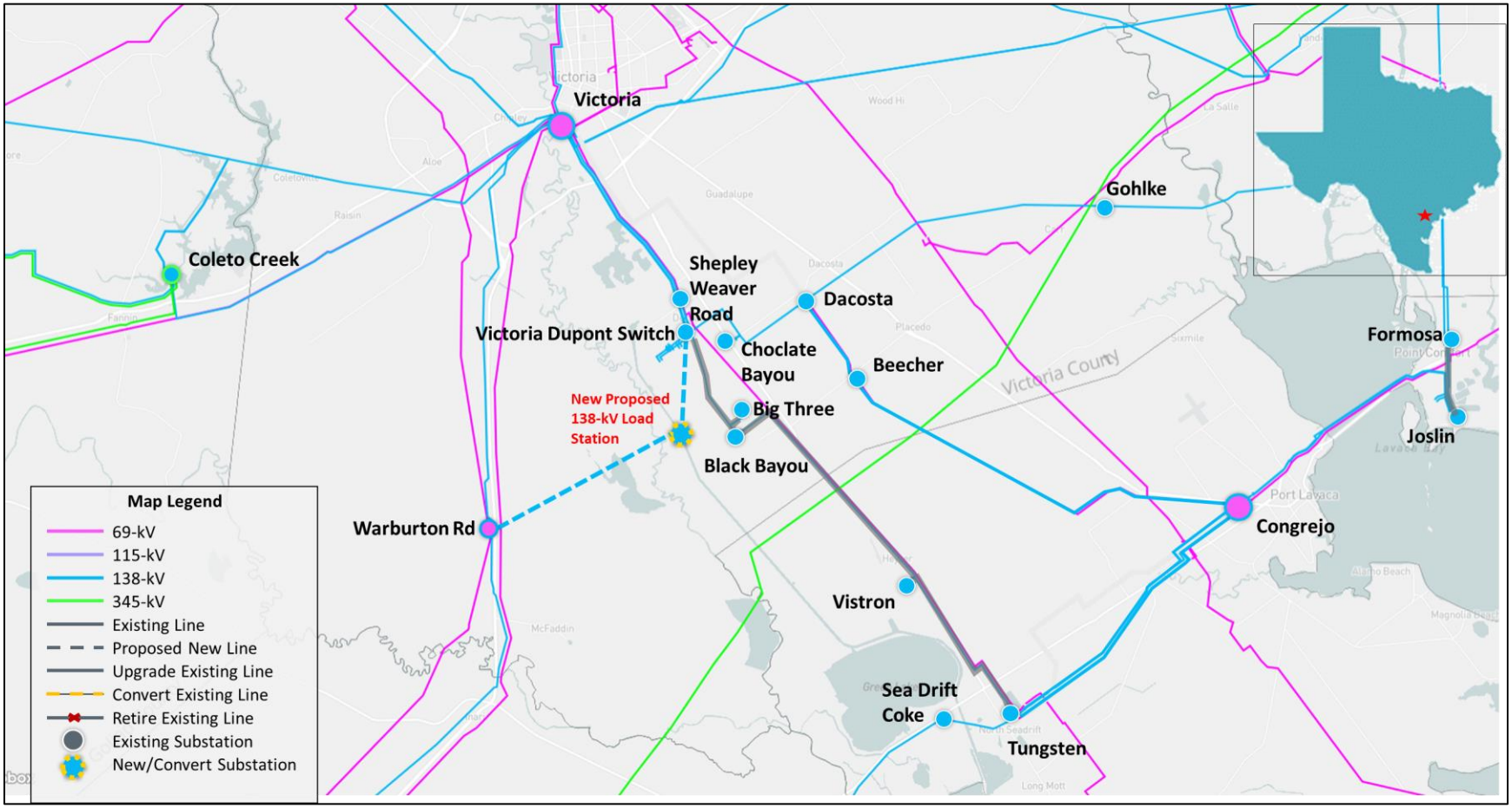
Option 2B – AEP Alternative Option



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, respectively, which will require a new ROW, approximately 10.35-mile;
- 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.

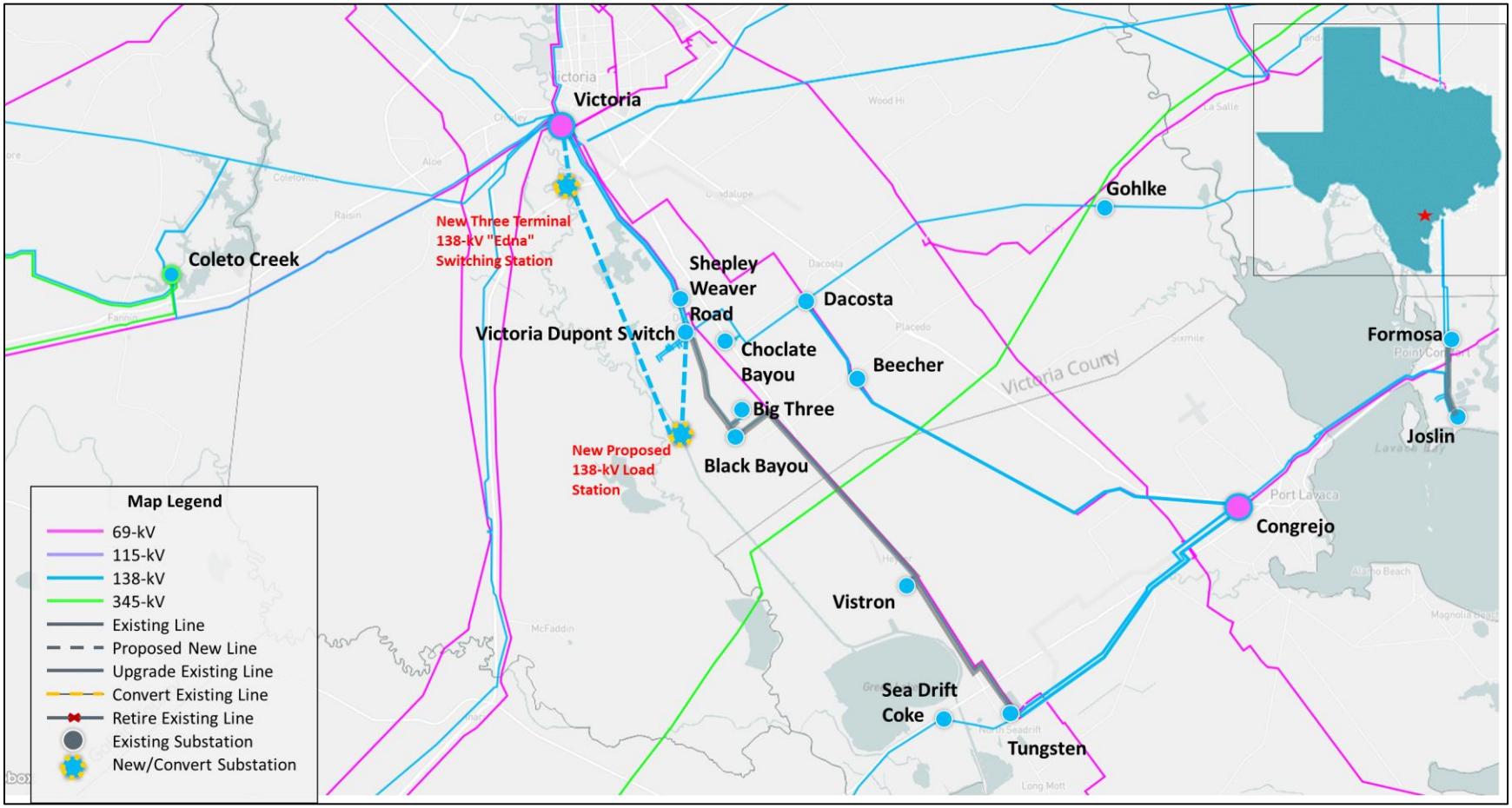
Option 3 – Modified STEC Alternative Option



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, respectively, which will require a new ROW, approximately 8.05-mile;
- 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.

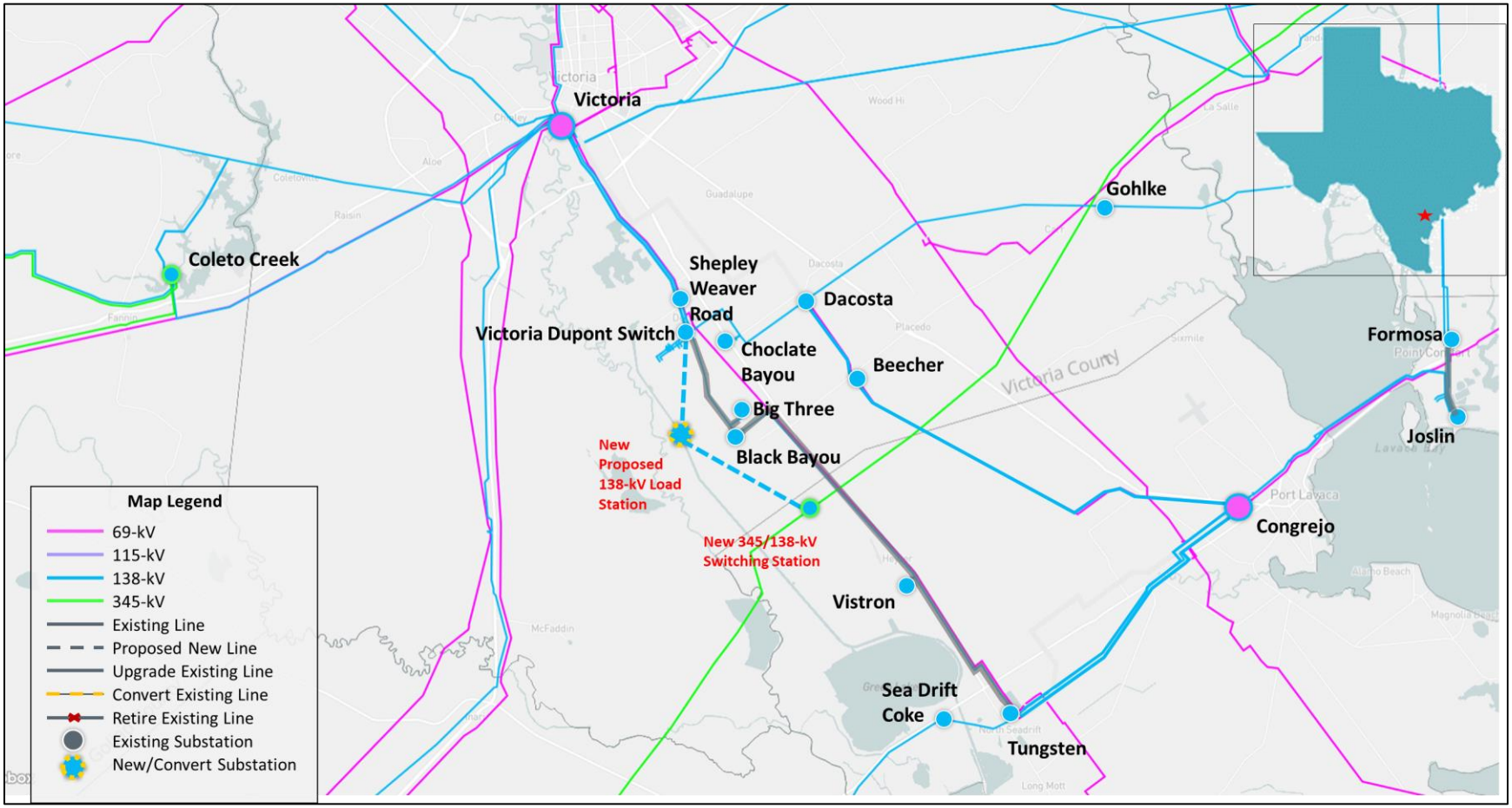
Option 4 – Modified STEC Alternative Option



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 the Angstrom to 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, respectively, which will require a new ROW, approximately 8-mile;
- 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.

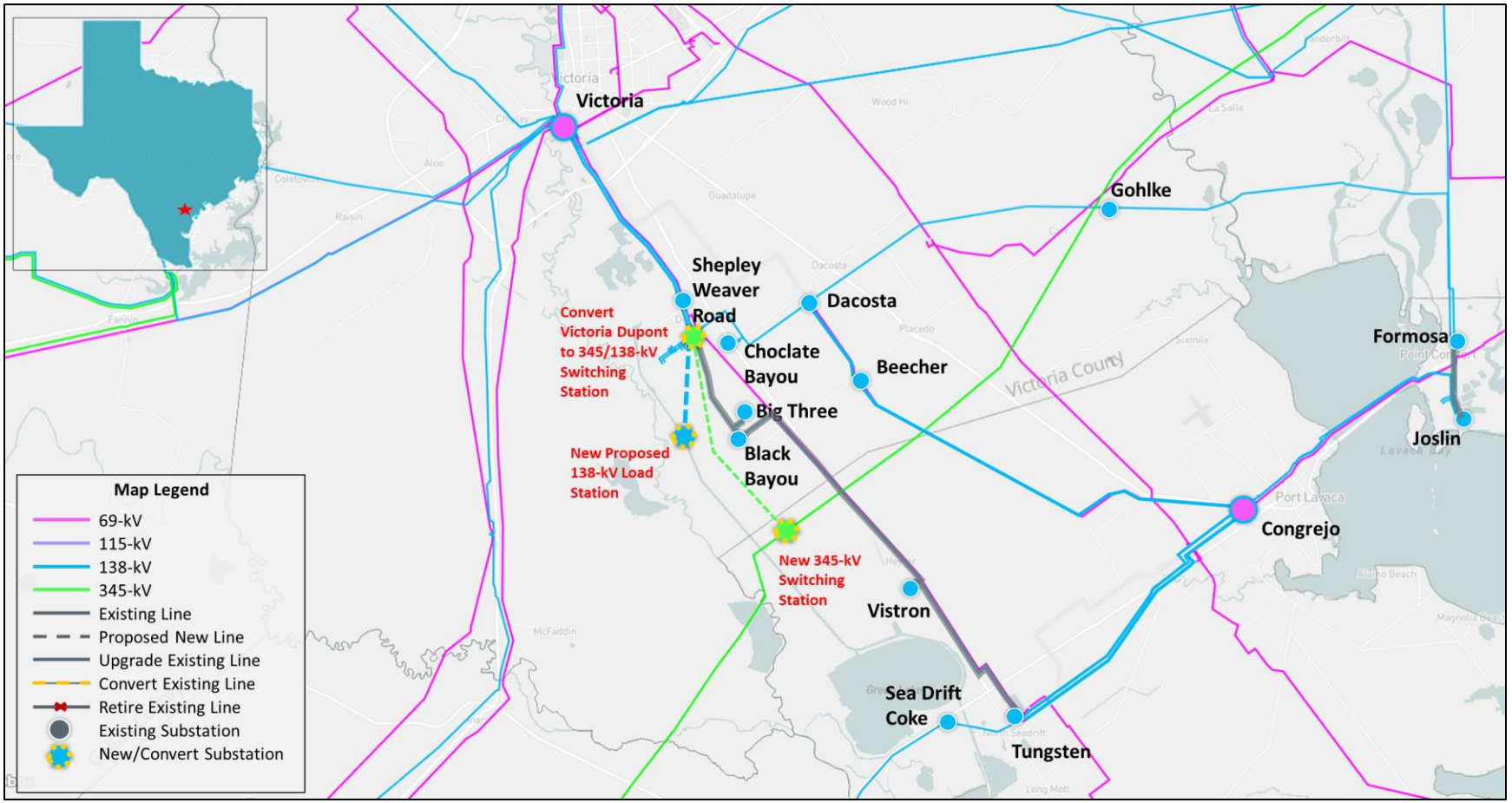
Option 5 – Modified STEC Alternative Option



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 the Angstrom to 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, respectively, which will require a new ROW, approximately 9-mile;
- 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 5A – ERCOT Option



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: Coleto Creek 345/138-kV transformer

- Option 3 and Option 5A observed thermal overloads under G-1+N-1 contingency conditions and are removed from further evaluations

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

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 4 was deemed to be infeasible due to expansion restrictions at an existing 138-kV facility and will be removed from the short-listed options and further evaluations

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
  - Is the least cost option
  - Significantly improves Long-Term Load-Serving Capability
  - 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.

Generation Addition and Load Scaling Sensitivity Analyses

- Generation Addition Sensitivity Analysis
  - Per Planning Guide Section 3.1.3(4)(a), ERCOT performed a generation addition sensitivity by adding the new generation listed in Appendix E to the preferred option case. The additional resources were modeled following the 2024 RTP methodology. ERCOT determined relevant generators do not impact the preferred option
- Load Scaling Sensitivity Analysis
  - Planning Guide Section 3.1.3(4)(b) requires an evaluation of the potential impact of load scaling on the criteria violations seen in this EIR. Starting 2024, ERCOT RTP adopted a new methodology of having one summer peak case for each study year with non-coincident peaks for each of the Weather Zones, which would eliminate the load scaling impact. The study case did not include load scaling as such load scaling sensitivity analysis is no longer needed

Subsynchronous Oscillations (SSO) Assessment

- Subsynchronous Oscillations (SSO) Assessment
  - Subsynchronous Oscillations (SSO) Assessment was conducted for the preferred option per Nodal Protocol Section 3.22.1.3
  - ERCOT found no adverse SSO impacts to the existing and planned generation resources at the time of this study

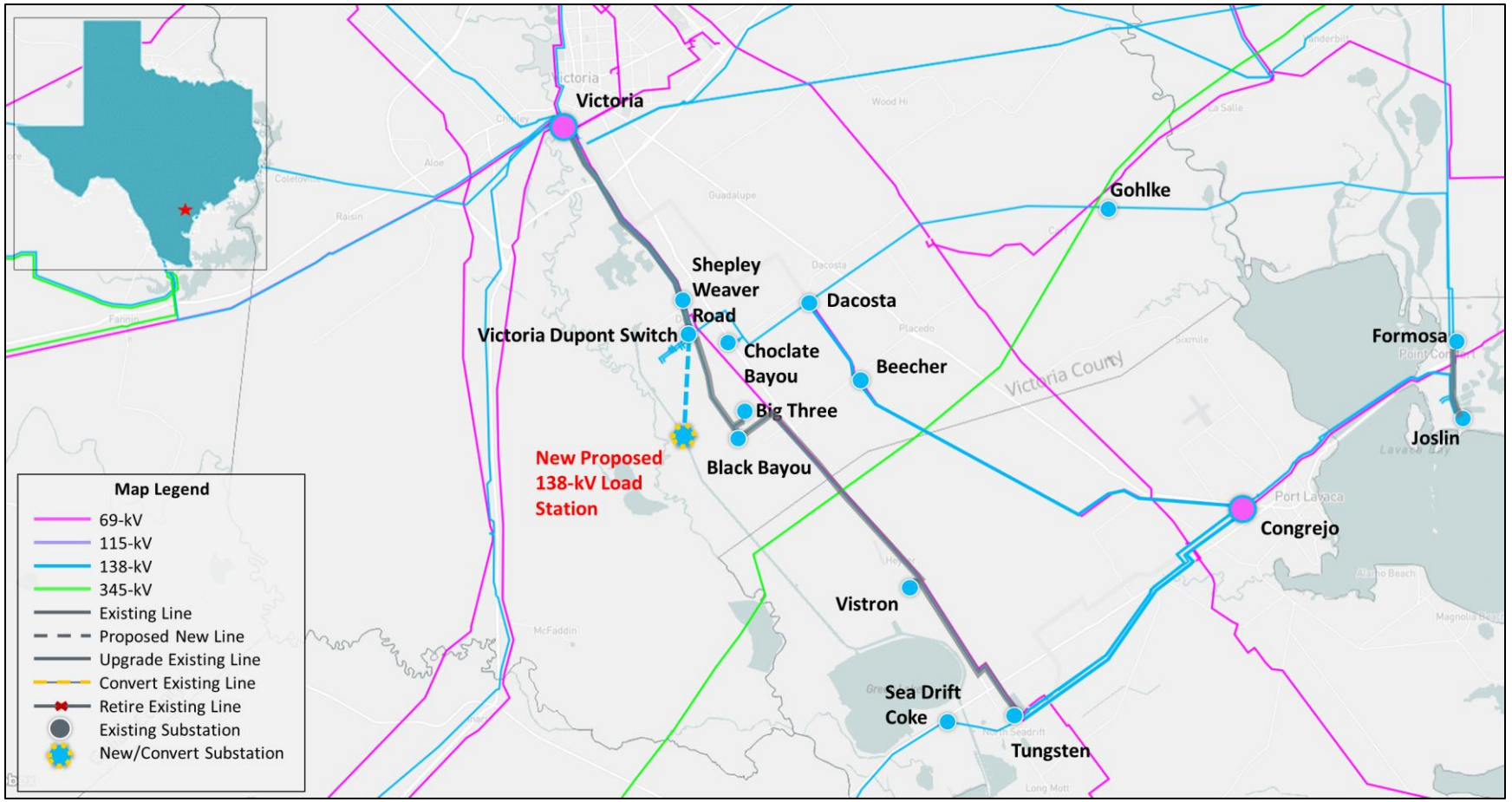
Congestion Analysis

- Congestion Analysis
  - Congestion analysis was performed for the preferred option using the 2024 RTP 2029 economic case
  - The preferred option did not result in any new congestion within the study area

ERCOT Recommendation

- ERCOT recommends Option 1
  - Estimated Cost: approximately $117.38 million
  - Expected ISD: June 2028
  - CCN filling will be required to
    - Construct the new 138-kV single-circuit line from Dupont Switching station to new large load and the removal of the double-circuit section of the Victoria Plant to Shepley and Victoria Plant to Dupont 138-kV circuits due to approximately 11.1-mile of new ROW

Map of ERCOT Recommended Option



ERCOT Recommended Option

- Connect the new large load confirmed by Transmission Service Provider (TSP) Attestation Letter 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 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.

Next Steps and Tentative Timeline

- Tentative timeline
  - EIR report to be posted in the MIS in December 2025
  - EIR recommendation to TAC in January 2026
  - Seek ERCOT Board of Directors endorsement in February 2026

Thank you!

Stakeholder comments also welcomed through:

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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 Furhman 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	Coleto Creek – Ckt 1 345/138-kV
Formosa Units	

Appendix E – List of Units for Generation Addition Sensitivity Analysis

GINR	Project Name	Fuel	Projected COD	Max Capacity (~MW)	County
23INR0342	Brizo BESS	OTH	140.8	Victoria	23INR0342
24INR0401	Portside Energy Center (Solar) SLF	SOL	41.1	Victoria	24INR0401
24INR0403	Portside Energy Center (BESS) SLF	OTH	41.1	Victoria	24INR0403
26INR0021	Crossroads Wind	WIN	253.3	Victoria	26INR0021
27INR0224	Leopard BESS	OTH	264.24	Victoria	27INR0224