



Oncor Southern DFW Load Interconnection and General Grid Strengthening Project – ERCOT Independent Review Scope

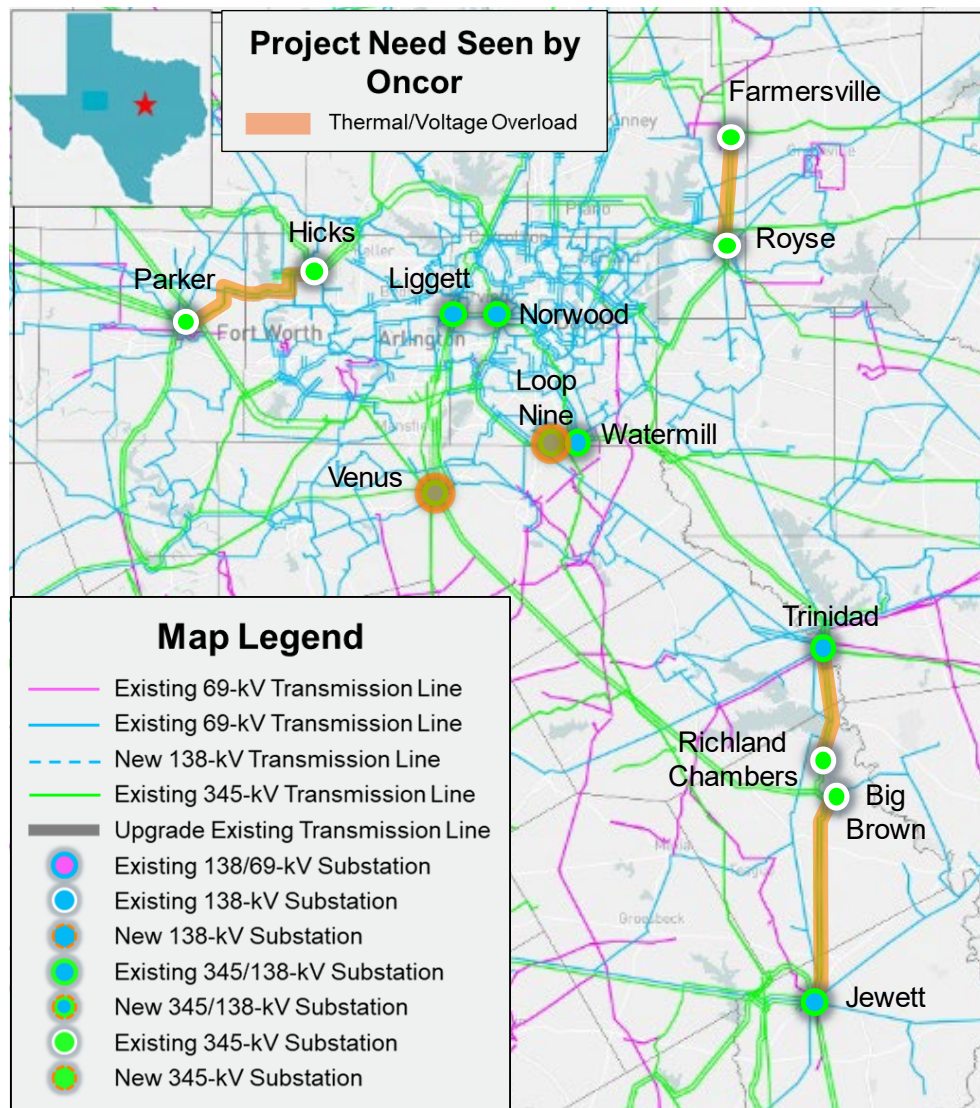
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RPG Meeting
April 29, 2025

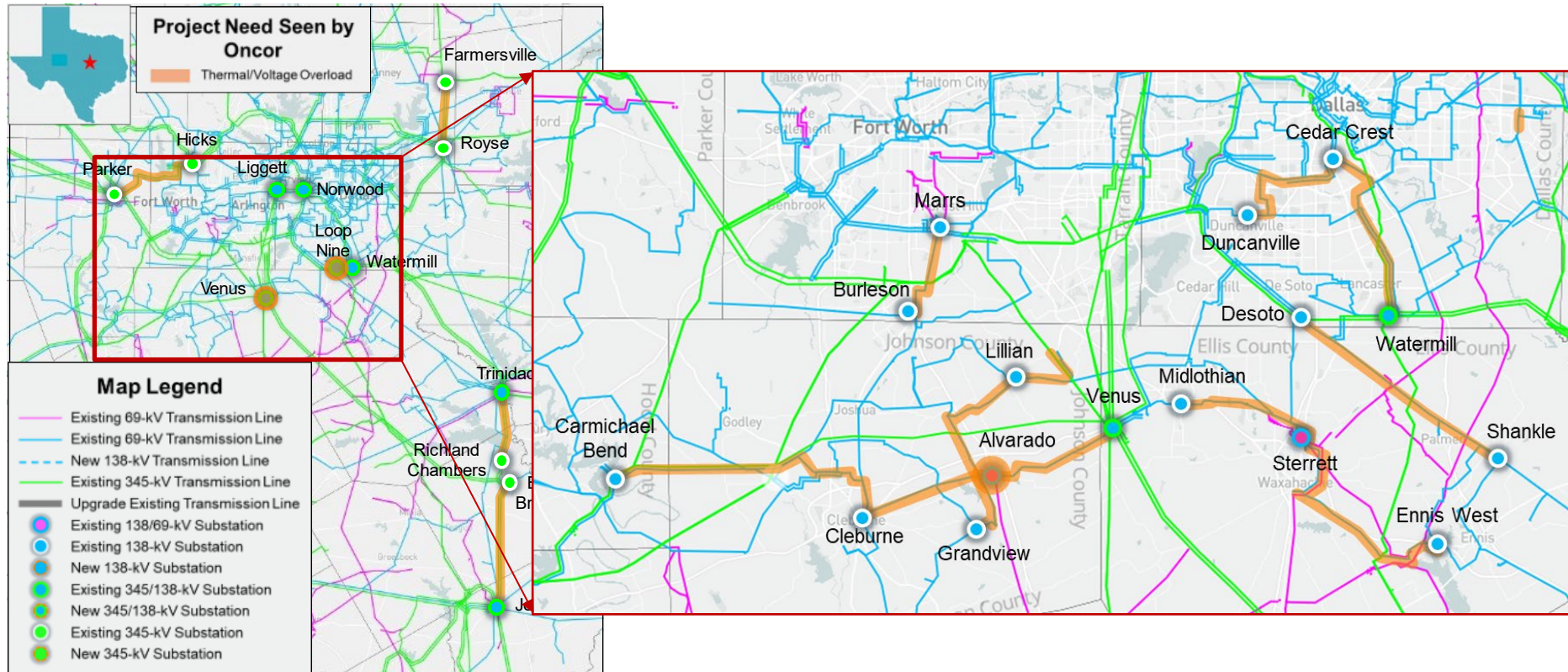
Introduction

- Oncor submitted the Southern Dallas Fort Worth (DFW) Load Interconnection and General Grid Strengthening Project for Regional Planning Group (RPG) review in February 2025
 - This Tier 1 project is estimated to cost \$1.219 billion and will require a Certificate of Convenience and Necessity (CCN) filing
 - Estimated in-service date (ISD) is December 2028
 - Addresses the thermal overloads and voltage violations due to proposed load additions in the Southern DFW in the North Central and East Weather Zones
- This project is currently under ERCOT Independent Review (EIR)

Study Area Map with Violations Seen by Oncor on 345-kV System



Study Area Map with Violations Seen by Oncor on 138-kV System



Project Proposed by Oncor

- Construct a new Greene Road 345/138-kV Switch by installing fourteen 345-kV, 5,000 A and ten 138-kV, 3,200 A breakers in a breaker-and-a-half bus arrangement;
 - Re-terminate the existing Watermill Switch to Sargent Road Switch/West Levee Switch 345-kV double-circuit transmission line into the new Greene Road 345-kV Switch, which creates the new Watermill Switch to Greene Road Switch and Greene Road Switch to Sargent Road Switch/West Levee Switch 345-kV double-circuit transmission lines;
 - Re-terminate the existing Wilson Switch to Cedar Hill Switch/Cedar Crest Switch 138-kV double-circuit transmission line into the new Greene Road 138-kV Switch, which creates the new Wilson Switch to Greene Road Switch and Greene Road Switch to Cedar Hill Switch/Cedar Crest Switch 138-kV double-circuit transmission line;
 - Install two new 345/138-kV autotransformers with a normal rating of 700 MVA and an emergency rating of 750 MVA;
- Rebuild the new Greene Road Switch to Watermill Switch 345-kV double-circuit transmission line on double-circuit structures with both circuits in place, with normal and emergency ratings of at least 2,987 MVA, approximately 3.6-mile;
- Rebuild the new Wilson Switch to Greene Road Switch 138-kV double-circuit transmission line on double-circuit structures with both circuits in place, with normal and emergency ratings of at least 764 MVA, approximately 2.0-mile;
- Rebuild the new Greene Road Switch to Cedar Crest 138-kV single-circuit transmission line on double-circuit structures with one circuit in place, with normal and emergency ratings of at least 764 MVA, approximately 10.9-mile;

Project Proposed by Oncor (cont.)

- Construct a new Alba Road 345-kV Switch by installing eleven 345-kV, 5,000 breakers in a breaker-and-a-half bus arrangement;
 - Re-terminate the existing Watermill Switch to Greene Road Switch 345-kV double-circuit transmission line into the new Alba Road 345-kV Switch, which creates the new Watermill Switch to Alba Road Switch and Alba Road Switch to Greene Road Switch 345-kV double-circuit transmission lines;
- Construct a new Stainback 345-kV Switch by installing fourteen 345-kV, 5,000 breakers in a breaker-and-a-half bus arrangement;
 - Re-terminate the existing Watermill Switch to Elrod Switch/Big Onion Switch 345-kV double-circuit transmission line into the new Stainback 345-kV Switch, which creates the new Watermill Switch to Stainback Switch and Stainback Switch to Elrod Switch/Big Onion Switch 345-kV double-circuit transmission lines;
- Rebuild the new Watermill Switch to Stainback Switch 345-kV double-circuit transmission line on double-circuit structures with both circuits in place, with normal and emergency ratings of at least 2,987 MVA, approximately 3.0-mile;
- Rebuild the existing Watermill Switch to Wilson Switch 138-kV double-circuit transmission line on double-circuit structures with both circuit in place, with normal and emergency ratings of at least 764 MVA, approximately 0.8-mile;

Project Proposed by Oncor (cont.)

- Construct a new Ironwood 345/138-kV Switch by installing seventeen 345-kV, 5,000 A and ten 138-kV, 3,200 A breakers in a breaker-and-a-half bus arrangement;
 - Re-terminate the existing Liggett Switch to Endeavor Switch 345-kV Line at the new Ironwood 345-kV Switch, which creates the new Liggett Switch to Venus Switch (north bus)/Ironwood Switch 345-kV double-circuit transmission line;
 - Disconnect the existing Endeavor Switch to Venus Switch (south bus) and Midlothian ANP #2 to Venus Switch (south bus) 345-kV Lines from Venus Switch (south bus) and connect the Midlothian ANP to Endeavor 345-kV Switch. This will create Midlothian ANP #1 to Venus Switch (north bus) and Midlothian ANP #2 to Endeavor Switch 345-kV double-circuit transmission line;
 - Re-terminate the existing Timberview Switch to Venus Switch (south bus) at the new Ironwood 345-kV Switch, which creates the new Everman Switch to Venus Switch (north bus) and Timberview Switch to Ironwood Switch 345-kV double-circuit transmission line;
 - Re-terminate the existing Cedar Hill Switch to Venus Switch (south bus) at the new Ironwood 345-kV Switch, which creates the new Sherry Switch to Venus Switch (north bus) and Cedar Hill Switch to Ironwood Switch 345-kV double-circuit transmission line;
 - Re-terminate the existing Sam Switch to Venus Switch (south bus) at the new Ironwood 345-kV Switch, which creates the new Fort Smith Switch to Venus Switch (north bus) and Sam Switch to Ironwood Switch 345-kV double-circuit transmission line;
 - Re-terminate the existing Navarro Switch to Venus Switch (south bus) at the new Ironwood 345-kV Switch, which creates the new Navarro Switch to Venus Switch (north bus)/Ironwood Switch 345-kV double-circuit transmission line;
 - Re-terminate the existing Cottonwood Creek 345/138-kV Autotransformer #2 at the north bus of Venus 345-kV Switch by installing one 345-kV, 5,000 A breaker;
 - Install two 345/138-kV autotransformers with normal and emergency ratings of 700 MVA and 750 MVA, respectively;

Project Proposed by Oncor (cont.)

- Loop the existing Kemp Ranch Switch to Sardis Switch/Soap Creek 138-kV double-circuit transmission line into the new Ironwood 138-kV Switch by disconnecting the double-circuit line at structure #1/2 (Midlothian Tap) and constructing four circuits from Midlothian Tap to the new Ironwood 138-kV Switch on separate structures, with normal and emergency ratings of at least 764 MVA, approximately 2.0-mile each;
- Rebuild the two Kemp Ranch Switch to Midlothian Tap 138-kV single-circuit transmission line sections using two separate structures, with normal and emergency ratings of at least 764 MVA, approximately 0.5-miles each;
- Rebuild the existing Sterrett Switch to Midlothian TXI 138-kV single-circuit transmission line sections, with normal and emergency ratings of at least 764 MVA, approximately 11.8-mile;
- Rebuild the existing Ennis West Switch to Sterrett Switch 138-kV single-circuit transmission line, with normal and emergency ratings of at least 614 MVA, approximately 21.0-mile;

Project Proposed by Oncor (cont.)

- Rebuild the existing Big Brown 345-kV Switch by installing twelve 345-kV, 5,000 A breakers in a breaker-and-a-half bus arrangement. Upon completion, Big Brown Switch will be renamed as Pin Oak Switch;
 - Re-terminate the existing Big Brown Switch to Jewett Switch 345-kV double-circuit transmission line at the new Pin Oak 345-kV Switch, which creates the new Pin Oak Switch to Jewett Switch 345-kV double-circuit transmission line;
 - Re-terminate the existing Big Brown Switch to Navarro Switch 345-kV double-circuit transmission line at the new Pin Oak 345-kV Switch, which creates the new Pin Oak Switch – Navarro Switch 345-kV double-circuit transmission line;
 - Re-terminate the existing Big Brown Switch to Richland Chamber Switch 345-kV double-circuit transmission line at the new Pin Oak 345-kV Switch, which creates the new Pin Oak Switch to Richland Chambers Switch 345-kV double-circuit transmission line;
- Rebuild the new Jewett Switch to Pin Oak Switch 345-kV double-circuit transmission line on double-circuit structures with both circuits in place, with normal and emergency ratings of at least 1,792 MVA and with a conductor rating of at least 2,987 MVA, approximately 32.8-mile;
- Rebuild the existing Richland Chambers Switch to Trinidad Switch 345-kV double-circuit transmission line on double-circuit structures with both circuits in place with normal and emergency ratings of at least 1,792 MVA and a with conductor rating of at least 2,987 MVA, approximately 18.7-mile;

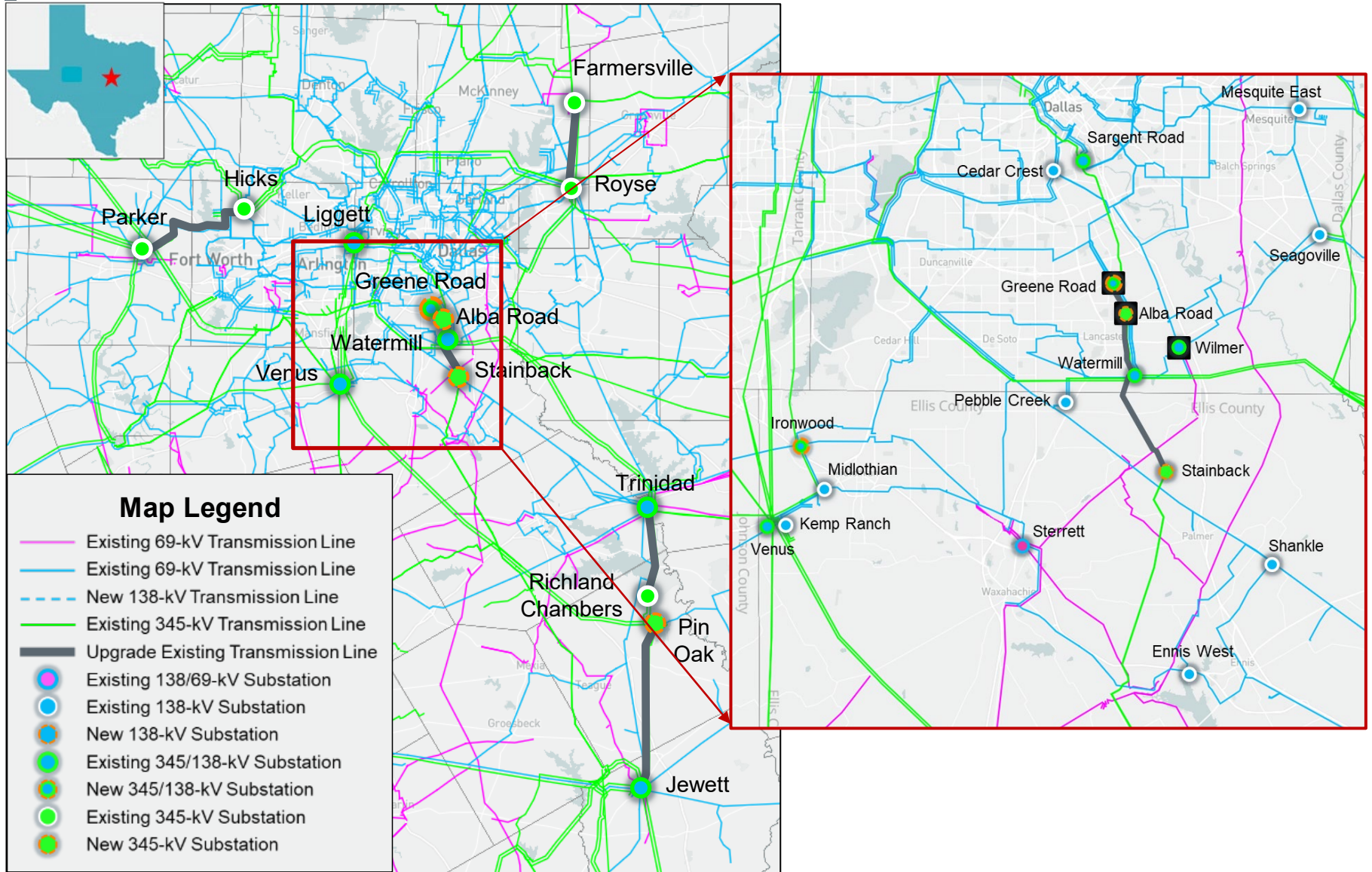
Project Proposed by Oncor (cont.)

- Rebuild the existing Parker Switch to Hicks Switch 345-kV transmission line, with normal and emergency ratings of at least 1,912 MVA and with a conductor rating of at least 2,987 MVA, approximately 23.0-mile;
- Rebuild the existing Pebble Creek Switch to Shankle Switch 138-kV transmission line, with normal and emergency ratings of at least 764 MVA, approximately 15.5-mile;
- Rebuild the existing Mesquite East Switch to Seagoville Switch 138-kV transmission line, with normal and emergency ratings of at least 764 MVA, approximately 7.4-mile;
- Rebuild the existing Farmersville Switch to Royse Switch 345-kV double-circuit transmission line on double-circuit structures with both circuits in place, with normal and emergency ratings of at least 1,792 MVA and with a conductor rating of at least 2,987 MVA, approximately 15.25-mile;
- Install one +250/-250 MVar STATCOM at each of the switch stations below. The STATCOMs are intended to be Grid-forming;
 - Greene Road 345-kV Switch
 - Alba Road 345-kV Switch
 - Wilmer 345kV Switch

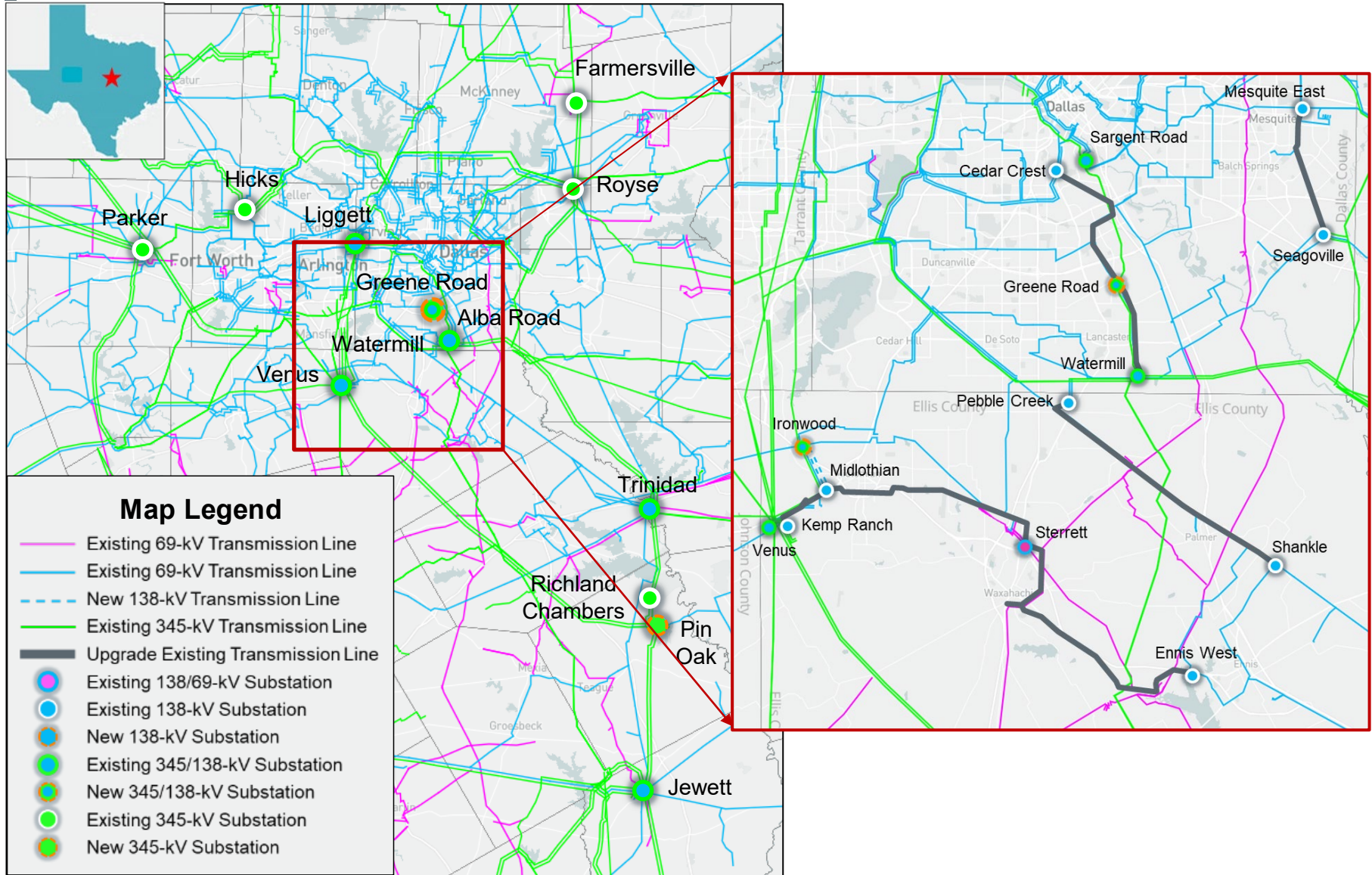
Project Proposed by Oncor (cont.)

- Install two 240 MVar 345-kV capacitor banks (3-80 MVar each) at;
 - Greene Road 345-kV Switch
 - Alba Road 345-kV Switch
 - Stainback 345-kV Switch
- Install two 110.4 MVar 138-kV capacitor banks (3-36.8 MVar each) at;
 - Greene Road 138-kVSwitch
 - Ironwood 138-kVSwitch
 - Pebble Creek 138-kVSwitch
- For existing 345-kV terminal equipment, ensure they meet or exceed a rating of at least 3,000 A;
- For the new 345-kV terminal equipment, ensure they meet or exceed a rating of 5,000 A if the station is 5,000 A capable. Otherwise ensure the new 345-kV terminal equipment meets or exceeds a rating of 3,200 A; and
- For the 138-kV terminal equipment, ensure they meet or exceed a rating of 3,000 A.

Map of Proposed Option with 345-kV Upgrades



Map of Proposed Option with 138-kV Upgrades



Study Assumptions – Base Case

- Study Region
 - North Central and East Weather Zones, focusing on the transmission elements in Collin, Dallas, Ellis, Freestone, Henderson, Leon, Navarro, Parker, Rockwall, and Tarrant Counties
- Steady-State Base Case
 - Final 2024 Regional Transmission Planning (RTP) 2029 summer peak, posted in Market Information System (MIS), will be updated to construct the summer peak load study base cases
 - Summer Peak Case: 2024RTP_2029_SUM_12202024
 - Link: <https://mis.ercot.com/secure/data-products/grid/regional-planning>

Study Assumptions – Transmission

- Based on the February 2025 Transmission Project and Information Tracking (TPIT) posted on ERCOT website, projects with in-service dates on or before December 2028 within the study area will be added to the study base case if not already modeled in the case
 - TPIT Link: <https://www.ercot.com/gridinfo/planning>
 - See [Appendix A1](#) for the list of transmission projects to be added
- Transmission projects identified in the 2024 RTP as placeholder projects related to this RPG project will be removed to develop the study base case
 - See [Appendix A2](#) for the list of transmission projects to be removed

Study Assumptions – Generation

- New generation that met Planning Guide Section 6.9(1) condition with Commercial Operation Date (COD) before December 2028 in the study area at the time of the study, but not already modeled in the RTP case, will be added to the study base case based on the March 2025 Generator Interconnection Status (GIS) report posted on the ERCOT website in April 2025
 - GIS Link: <https://www.ercot.com/gridinfo/resource>
 - See [Appendix B](#) for the list of generation projects to be added
- All generation will be dispatched consistent with the 2024 RTP methodology
- All recent retired/indefinitely mothballed units will be reviewed and opened (turned off), if not already reflected in the 2024 RTP Final case

Study Assumptions – Load & Reserve

- Load in study area
 - Loads in the study area will be scaled down to reflect the project submittal
- Reserve
 - Load outside study area may be scaled to maintain the reserve consistent with the 2024 RTP

Contingencies and Criteria

- Contingencies

- NERC TPL-001-5.1 and ERCOT Planning Criteria
- Link: <https://www.ercot.com/mktrules/guides/planning/current>
 - P0 (System Intact)
 - P1, P2-1, P7 (N-1 condition);
 - P2-2, P2-3, P4, and P5 (345-kV only);
 - P3: G-1+N-1 (G-1: generation outages) {Dansby Plant, Diamond Shamrock Battleground Combined Cycle Train (CCT), Forney CCT, Mt. Creek SES}; and
 - P6-2: X-1+N-1 (X-1: 345/138-kV transformers only) {Desoto Switch (SW), Greene Road, Monticello, Seagoville, Trinidad SES, Venus Kemp Ranch, West Levee SW}

- Criteria

- Monitor all 69-kV and above buses, transmission lines, and transformers in the study area (excluding generator step-up transformers)
- Thermal
 - Use Rate A for pre-contingency conditions
 - Use Rate B for post-contingency conditions
- Voltage
 - Voltages exceeding their pre-contingency and post-contingency limits
 - Voltage deviations exceeding 8% on non-radial load busses

Study Procedure

- Need Analysis
 - The reliability analysis will be performed to identify the need to serve the projected area load using the study base case
- Project Evaluation
 - Project alternatives will be tested to satisfy the NERC and ERCOT reliability requirements
 - ERCOT may also perform the following studies:
 - Planned maintenance outage
 - Long-Term Load-Serving Capability Assessment
 - Cost Estimate and Feasibility assessment will be requested from TSPs
- Additional Analysis on Preferred Option
 - 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

Next Steps and Tentative Timeline

- Tentative Timeline
 - Status updates at future RPG meetings
 - Final recommendation – Q3 2025

Thank you!



Stakeholder comments also welcomed through:

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Appendix A1 – Transmission Projects to Add

- List of transmission projects to be added to study base case

RPG/TPIT No	Project Name	Tier	Project ISD	From County
24RPG007	Canton Area Loop Project	Tier 2	10/1/2026	Van Zandt
24RPG016	Rand Area Loop Project	Tier 2	4/1/2027	Kaufman
24RPG017	Venus Switch to Sam Switch 345-kV Line Project	Tier 1	5/1/2026	Ellis, Hill
24RPG021	Forney 345/138-kV Switch Rebuild Project	Tier 1	12/1/2025	Kaufman
24RPG022	Wilmer 345/138-kV Switch Project	Tier 1	5/1/2026	Dallas
24RPG038	Bergheim Substation Upgrade Project	Tier 3	5/1/2028	Ellis

Appendix A2 – Transmission Projects to be Remove

- List of transmission projects to be removed from the study base case

Project ID	Project Name	TSP	County(s)
2024-E12	Trinidad SES (3124) to Richland Chambers (3134) 345-kV Line Upgrade	ONCOR	Freestone, Leon
2024-E3	Big Brown SES West (3381) to Jewett (3391) 345-kV Line Upgrade and Substation Rebuilds	ONCOR	Henderson, Freestone
2024-NC13	Pebble Creek (2229) to Trumbull (221) to Gamma (12344) to Shankle Switch (12329) 138-kV Line Upgrades	BEPC, ONCOR	Ellis
2024-NC14	Green Road (3069) to Ten Mile (2126) to Watermill (2429) to Reindeer (3065) 138-kV Line Upgrades	ONCOR	Dallas
2024-NC18	Ennis West Switch (2241) to Templeton (12320) to Waxahachie (2321) 138-kV Line Upgrades	ONCOR	Ellis, Waxahachie
2024-NC31	Royse Area 345-kV Line Upgrades and Substation Rebuilds	ONCOR	Collin, Hopkins, Rockwall, Fannin, Lamar
2024-NC63	Watermill Area 345-kV Line Additions and Reactive Support	ONCOR, LST	Dallas, Navarro, Hill, Leon
2024-NC68	Batchler Road (2217) to Watermill (2427) 345-kV Line Upgrades	ONCOR	Dallas
2024-NC70	Miller Road (2632) 345/138-kV Substation Addition and 345-kV Lines Re-Termination	ONCOR	Dallas, Ellis
2024-NC73	Greene Road (3069) to Cedar Crest (2486) 138-kV Line Upgrades	ONCOR	Dallas
2024-NC85	Miller Road (2635) to Kemp Ranch Switch (2303) 138-kV double-circuit transmission line Upgrade	ONCOR	Ellis
2024-NC86	Greene Road (3063/3069) New 138-kV and 345-kV Line Additions and Substation Rebuilds	ONCOR	Dallas
2024-NC85	Miller Road (2635) to Kemp Ranch Switch (2303) 138-kV double-circuit transmission line Upgrade	ONCOR	Freestone, Leon

Appendix B – New Generation Projects to Add

GINR	Project Name	Fuel	Projected COD	Capacity (~MW)	County
21INR0359	Hickerson Solar	SOL	03/01/2026	316.3	Bosque
22INR0525	St. Gall II Energy Storage	OTH	07/01/2025	100.2	Pecos
23INR0372	Cross Trails Storage	OTH	05/26/2025	58.3	Scurry
24INR0493	Crowned Heron BESS 2	OTH	07/31/2025	154.2	Fort Bend
24INR0578	Panther Creek 1 Repower	WIN	04/01/2025	11.0	Glasscock
24INR0582	Panther Creek 2 Repower	WIN	04/01/2025	8.0	Glasscock
24INR0631	Radian Storage SLF	OTH	04/22/2025	160.3	Brown
25INR0231	Apache Hill BESS	OTH	11/15/2026	200.9	Hood
25INR0578	Forest Creek Wind Repower	WIN	12/15/2025	125.1	Glasscock
25INR0672	Fagus Solar Park 2 SLF	SOL	02/11/2026	166.6	Childress
26INR0524	Fagus Solar Park 3 SLF	SOL	04/01/2026	186.8	Childress
20INR0162	Diamondback solar	SOL	12/31/2027	203.8	Starr
22INR0239	Rockefeller Storage	OTH	06/01/2027	206.8	Schleicher
22INR0437	TORMES SOLAR	SOL	03/31/2027	382.1	Navarro
22INR0457	Anson BAT	OTH	05/29/2026	150.6	Jones
23INR0181	Starling Storage	OTH	05/15/2027	63.6	Gonzales
23INR0244	Tiger Solar	SOL	06/30/2027	255.0	Jones
24INR0126	High Noon Storage	OTH	12/01/2027	94.0	Hill
24INR0188	Tehuacana Creek Solar SLF	SOL	03/10/2027	505.5	Navarro
24INR0189	Tehuacana Creek BESS SLF	OTH	03/10/2027	419.0	Navarro

Appendix B – New Generation Projects to Add (cont.)

GINR	Project Name	Fuel	Projected COD	Capacity (~MW)	County
24INR0201	Short Creek Solar	SOL	03/02/2029	625.0	Wichita
24INR0305	MRG Goody Storage	OTH	01/31/2026	52.3	Lamar
24INR0355	Anatole Renewable Energy Storage	OTH	01/11/2026	207.8	Henderson
24INR0364	Pitts Dudik II	SOL	01/29/2026	30.2	Hill
24INR0386	Black & Gold Energy Storage	OTH	06/30/2027	254.6	Menard
24INR0498	Fort Watt Storage	OTH	04/20/2027	205.4	Tarrant
24INR0528	Blanquilla BESS	OTH	05/15/2026	200.8	Nueces
24INR0584	Houston IV BESS	OTH	06/03/2026	168.6	Harris
25INR0018	Yellow Cat Wind	WIN	09/30/2026	301.2	Navarro
25INR0046	Blue Skies BESS	OTH	12/31/2027	306.3	Hill
25INR0103	Elio BESS	OTH	12/02/2026	317.2	Brazoria
25INR0282	Hornet Solar II SLF	SOL	06/01/2026	209.0	Swisher
25INR0283	Hornet Storage II SLF	OTH	06/01/2026	208.0	Swisher
25INR0319	Northington Solar	SOL	07/15/2027	129.8	Wharton
25INR0391	Purple Sage BESS 1	OTH	05/30/2027	156.0	Collin
25INR0392	Purple Sage BESS 2	OTH	05/30/2027	156.0	Collin
25INR0425	Aldrin 345 BESS	OTH	12/01/2027	362.0	Brazoria
25INR0492	Blue Summit Energy Storage	OTH	07/01/2026	100.0	Wilbarger
26INR0034	Bracero Pecan Storage	OTH	06/01/2026	232.0	Reeves
26INR0189	Skipjack Energy Storage	OTH	04/05/2027	150.6	Brazoria

Appendix B – New Generation Projects to Add (cont.)

GINR	Project Name	Fuel	Projected COD	Capacity (~MW)	County
26INR0226	First Capitol BESS	OTH	05/01/2026	257.5	Brazoria
26INR0269	Moccasin Solar	SOL	06/01/2027	806.8	Stonewall
26INR0296	Sherbino II BESS SLF	OTH	02/08/2026	77.4	Pecos
26INR0333	VERTUS ENERGY STORAGE	OTH	02/01/2026	401.4	Galveston
26INR0447	Honey Mesquite Wind Farm	WIN	12/15/2026	180.5	Glasscock
26INR0452	Cannibal Draw Solar	SOL	04/10/2028	149.5	Glasscock
26INR0453	Cannibal Draw Storage	OTH	04/10/2028	98.6	Glasscock
26INR0543	Three Canes Solar SLF	SOL	12/31/2026	333.0	Navarro