



**GP&L - Farmersville Area Reliability Project
– ERCOT Independent Review Scope and
Status Update**

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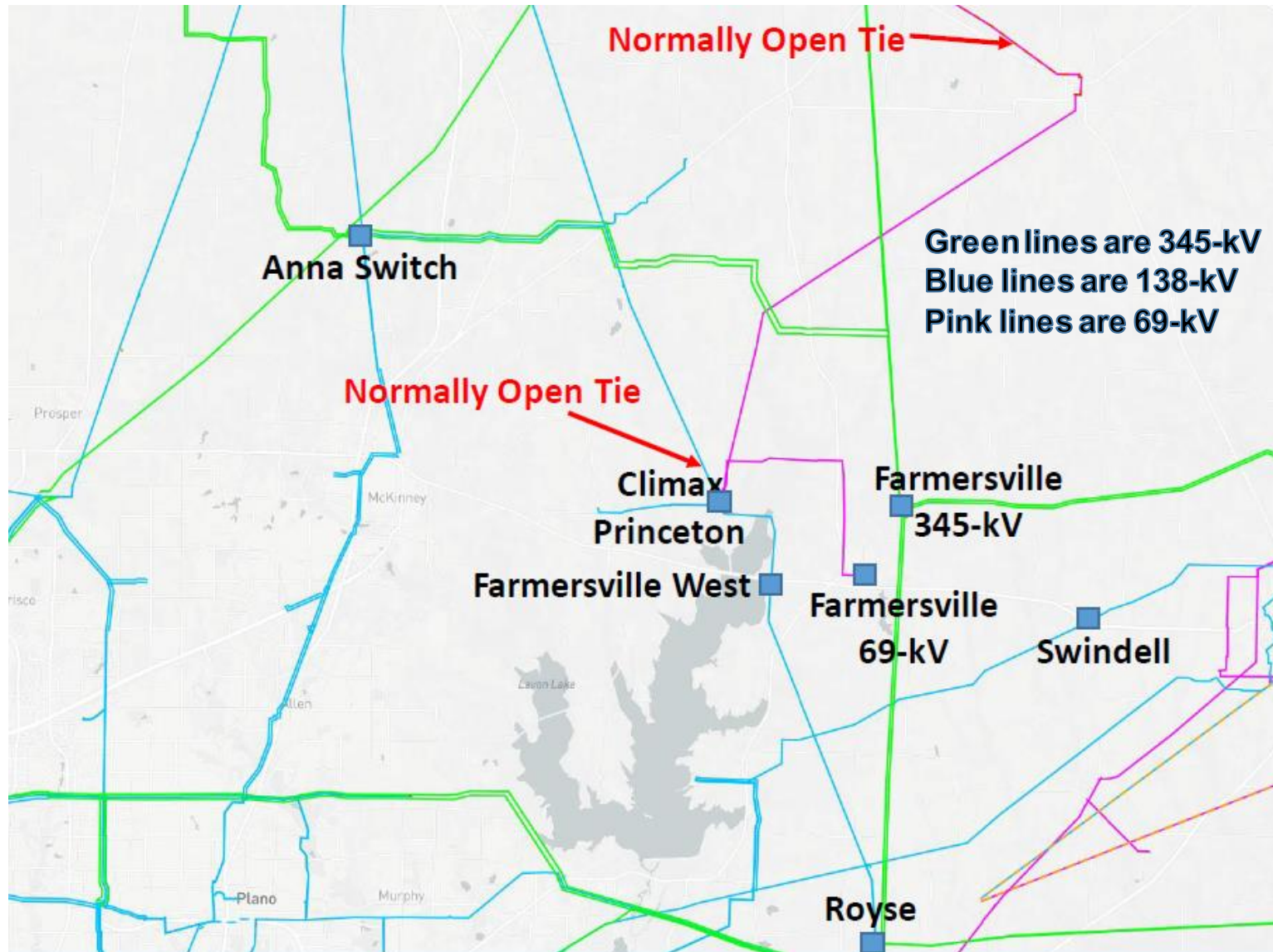
Regional Planning Group
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Introduction

Garland Power & Light (GP&L) submitted the Farmersville Area Reliability Project for Regional Planning Group review in December 2019. This is a Tier 2 project that is estimated at \$24.37 million.

- Proposed in-service date is Spring 2022
- Addresses GP&L's Planning criteria violation
 - Consequential load loss (entire city of Farmersville) under N-1 as the area is fed from one radial transmission line
- Proposed Option
 - Add a new 138-kV source from Swindell station to the city of Farmersville
 - Rebuild the existing 69-kV line to 138-kV to form a 138-kV loop in the area
- This project is currently under ERCOT independent review

Study Area



Study Assumptions

- **Study Base Cases**

- Final 2019 Regional Transmission Plan (RTP) case posted on the MIS on Dec 23, 2019
 - 2019RTP_2022_SUM_NNC_12232019
- Study Region: ERCOT North and North Central Weather Zones

- **Transmission Updates**

- Transmission Projects expected to be in-service within the study area by 2022 were added to the base case
 - None
- Not approved Tier 1, Tier 2, or Tier 3 transmission projects, as well as RTP proposed projects within the study area were removed from the base case
 - Oncor Anna – Royse 138-kV Tier 3 Transmission project (TPIT 6792)
 - Add a Capacitor Bank of a minimum of 55 MVAR at Anna SE (2704) 138-kV substation (2018-NC9)

- **Generation Updates**

- Generator additions that met Planning Guide Section 6.9(1) requirements with COD before the study year in the study area at the time of study (Jan 2020 GIS report) were added to the study base case
 - None

Contingencies and Criteria

- **Contingencies for Study Region**

- NERC TPL-001-4 and ERCOT Planning Criteria (http://www.ercot.com/content/wcm/current_guides/53526/04_050115.doc):
 - Normal system condition (P0)
 - N-1 conditions (P1, P2-1, P7)
 - P2, P4, and P5 (EHV only)
 - X-1 + N-1 (X-1 represents 345/138 kV transformer outage)
 - G-1 + N-1 (G-1 represents generator outage)

- **Criteria**

- Thermal
 - Monitor all transmission lines and transformers in the study region
 - Use Rate A for pre-contingency conditions
 - Use Rate B for post-contingency conditions
- Voltages
 - Monitor all busses 60 kV and above in the study region
 - Voltages exceeding their pre-contingency and post-contingency limits
 - Voltage deviations exceeding 8% on non-radial load busses
- TSP's Planning Criteria
 - No consequential load loss (entire city of Farmersville) under N-1

Study Procedure

- **Need Analysis**

- The reliability analysis was performed to identify any reliability needs in the area including the project need (i.e. loss of entire city of Farmerville under a single line outage) using the study base case
- Project need based on TSP's criteria (**Protocol Section 3.11.4.9(4)**)
 - ERCOT's independent review shall consider whether a reliability need exists under the TSP's criteria
 - ERCOT shall recommend a project that would address the need under TSP's criteria as well as any reliability need identified under NERC or ERCOT criteria
 - ERCOT or the ERCOT board will endorse such a project if ERCOT determines that it is justified in part under ERCOT or NERC criteria
 - Neither ERCOT nor the ERCOT Board shall endorse a project that is determined to be needed solely to meet a TSP's criteria

- **Project Evaluation**

- Project alternatives will be developed and tested to address the GP&L Planning criteria and any reliability issues resulting from the alternatives

Need Analysis

- **Study Base Case Violations**

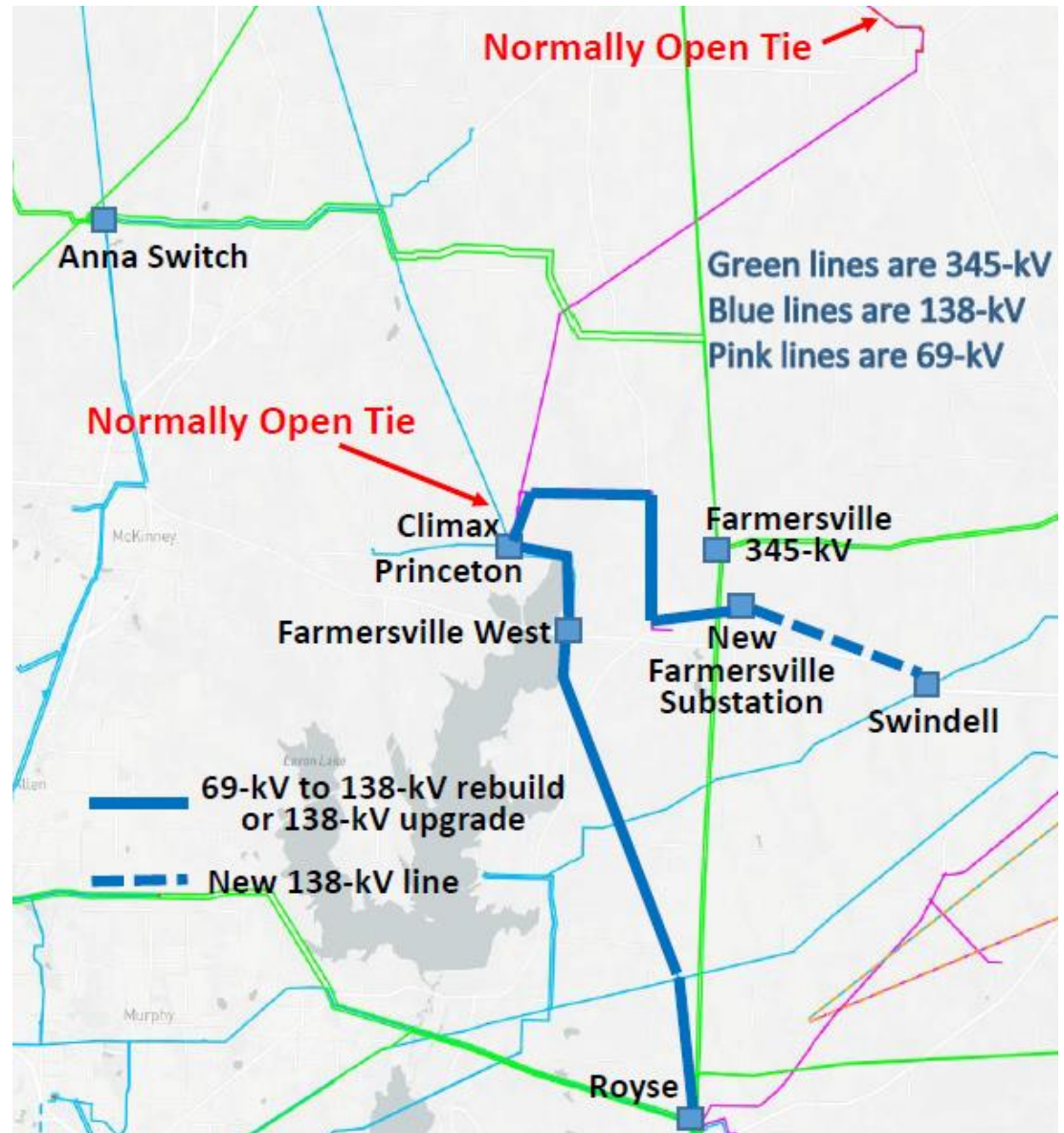
Scenario	Unsolved Power Flow	Thermal Overloads	Bus Voltage Violation
N-0	0	17.4 miles 138-kV	0
N-1	0	Consequential Load Loss (GP&L's Planning criteria violation)	13 138-kV Buses

- **Note**

- Royse – Farmersville West – Princeton 138-kV line (17.4 miles) serving the radial loads along the line was overloaded under N-0 and was upgraded before evaluating options

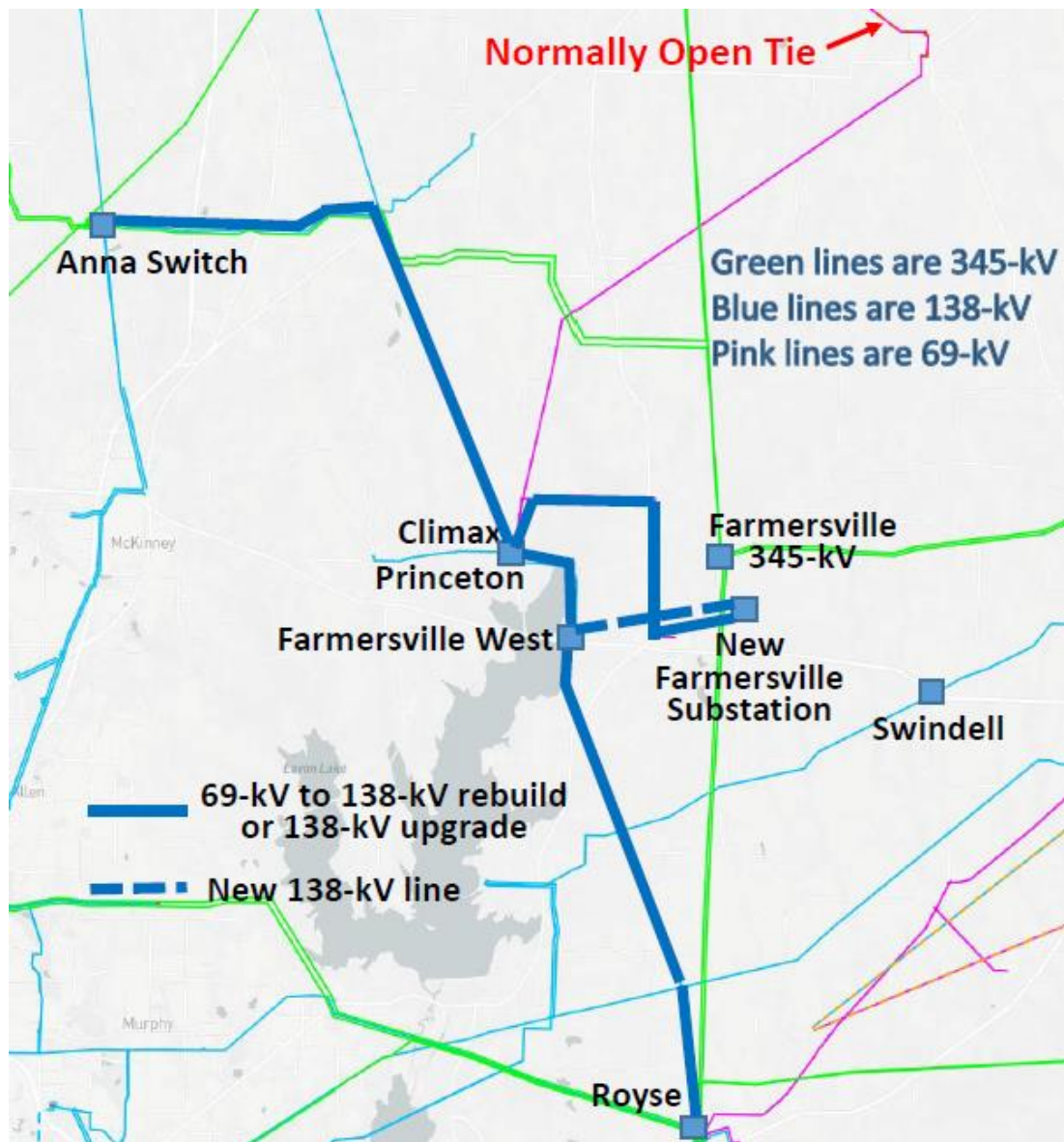
Preliminary Options - Option 1 (GP&L Proposed Solution)

- Build a new Farmersville 138-kV Substation
- Build a new single-circuit 138-kV line from Swindell to the new Farmersville Substation (~ 5 miles)
- Rebuild the existing Climax – Farmersville 69-kV line to 138-kV (~ 8 miles)
- Add a Capacitor Bank of a minimum of 55 MVAR at Anna SE (2704) 138-kV substation



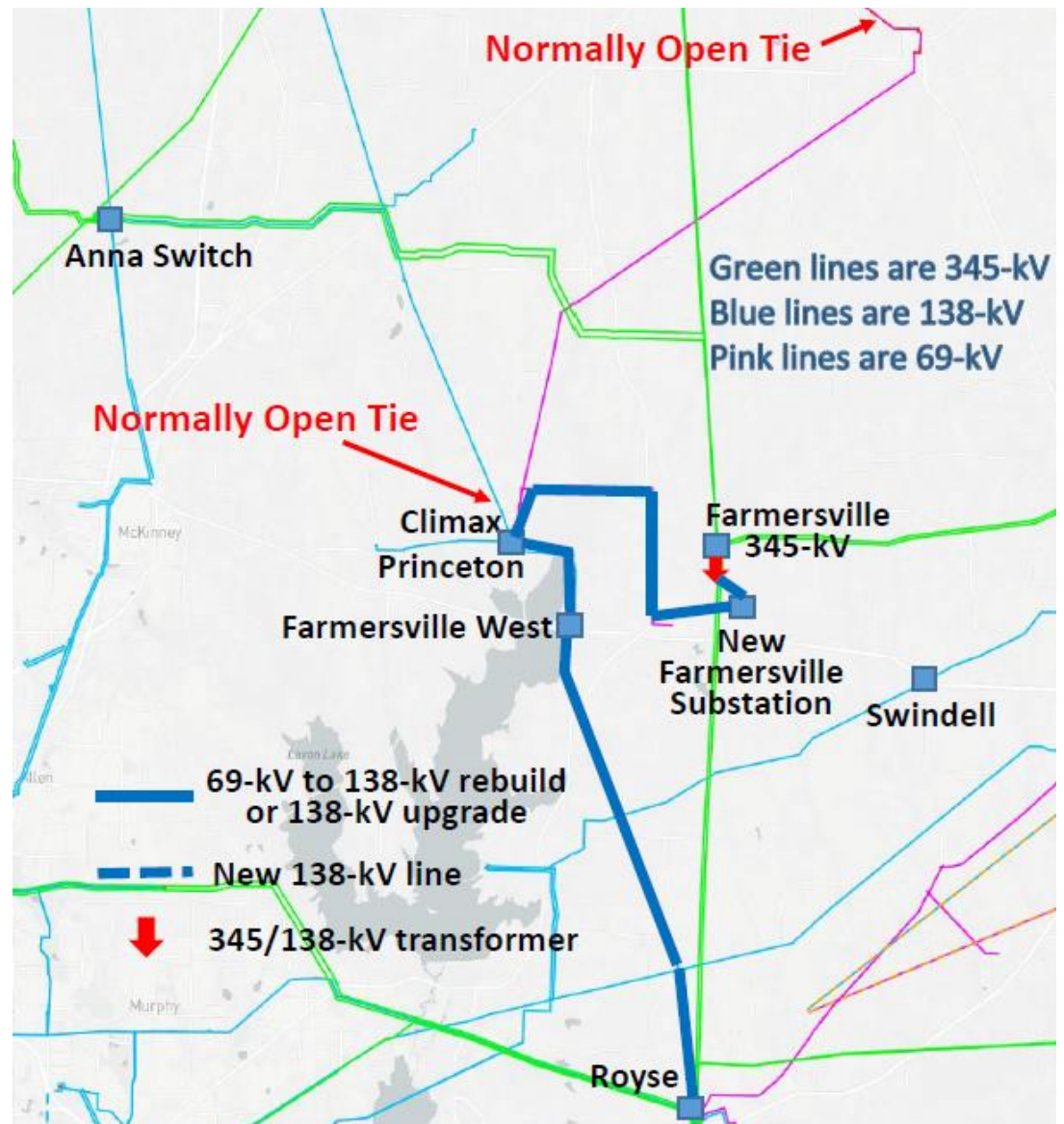
Preliminary Options - Option 2

- Build a new Farmersville 138-kV Substation
- Build a new single-circuit 138-kV line from Farmersville West to the new Farmersville Substation (~ 5 miles)
- Rebuild the existing Climax – Farmersville 69-kV line to 138-kV (~ 8 miles)
- Upgrade the Anna Switch – Princeton 138-kV line (~ 18 miles)



Preliminary Options - Option 3

- Build a new Farmersville 138-kV Substation
- Install one 345/138-kV transformer at the existing Farmersville Switch 345-kV Substation
- Build a new single-circuit 138-kV line from Farmersville Switch to the new Farmersville Substation (~ 2 miles)
- Rebuild the existing Climax – Farmersville 69-kV line to 138-kV (~ 8 miles)
- Add a Capacitor Bank of a minimum of 55 MVAR at Anna SE (2704) 138-kV substation



Preliminary Results of Option Evaluation

- **All three options provide two sources to the Farmersville area to address GP&L's Planning criteria violation under N-1**
- **Option 1**
 - Provides additional source to the Farmersville area other than depending on the single line of Royse – Anna 138-kV
- **Option 2**
 - The Farmersville area is fed through the single line of Royse – Anna 138kV
 - This option is depending on the upgrade of Anna Switch – Princeton 138-kV line
- **Option 3**
 - Provides a 345-kV source to the Farmersville area
 - Requires less new ROW

Next Step and Tentative Timeline

- **Next Step**

- Determine feasibility of each option
- Request cost estimates to TSPs
- Finalize the EIR

- **Tentative Timeline**

- Final recommendation – Q2 2020



Stakeholder Comments Also Welcomed to Sun Wook Kang:
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