PJM Facilities Study Report

for

Network Upgrade N9322

"Allen Junction 345kV Terminal Equipment Upgrade"

Revision 0: August 2025

Introduction

This Facilities Study has been prepared in accordance with the PJM Open Access Transmission Tariff and PJM Manuals. The Transmission Owner (TO) is American Transmission Systems, Inc. (ATSI).

A. Project Description

The System Impact Study for PJM Interconnection Cycle TC-1 has identified the need for PJM Network Upgrade N9322. The scope of this Network Upgrade includes the following:

- Upgrade terminal equipment and conductor on Morocco line terminal at Allen Junction

Upon completion of the Network Upgrade above, the expected final ratings will be:

Unit	Normal	LTE	STE	LD
MVA	1868	2249	2249	2586

B. Transmission Owner Facilities Study Results

1. Detailed Scope of work for Network Upgrade [N9322]:

The following is a detailed description of Transmission Owner Upgrades for Network Upgrade N9322. These facilities shall be designed according to the Transmission Owner's Applicable Technical Requirements and Standards. Once built the Transmission Owner will own, operate, and maintain these facilities.

1.1 Allen Junction 345 kV Substation

Replace bus side disconnect switch.

- Below Grade Scope of Work
    - None
- Above Grade Scope of Work
    - Replace conductor: Morocco transmission line drops, (1) single-phase drop to wave trap, and (4) breaker leads (B34531 and B34532) with (2) 795 kcmil 26/7 ACSS "Drake" conductors.
    - Replace (4) 345 kV 2000A GOAB disconnect switches with 3000A switches (D34531W, D34531E, D34532S, D34532N).
- Relay & Controls
    - Replace Bitronics M650 line metering with SEL-735.
    - Install (1) lot SEL and control cables.
    - Review and revise relay settings as required.
- Scope of Work Assumptions
    - All equipment to be rated for 2018.5 MVA
    - Existing switch stands can be reused.
    - Outages can be obtained to perform this work.
- Ancillary Scope of Work

- Project Management
  - Provide project management, coordination, administration, scheduling, material management and project development as required.
- Information Technology
  - Update points list as required.
- Testing & Commissioning
  - Test and commission all power assets as required

2. MILESTONE SCHEDULE FOR COMPLETION OF ATSI WORK

Facilities outlined in this report are estimated to take 38 months to construct, from the time the Generation Interconnection Agreement is fully executed. This schedule is based on the ability to obtain outages to construct and test the proposed facilities.

Description	Start Month	Finish Month
Preliminary Engineering	1	2
Siting, Permits & Real Estate	5	29
Detailed Engineering	3	29
Equipment Delivery	31	31
Construction	32	37
Testing & Commissioning	36	38

3. ASSUMPTIONS IN DEVELOPING SCOPE/COST/SCHEDULE

3.1 Scope Assumptions:

- N/A

3.2 Cost Estimate Assumptions:

- The cost estimates provided for this report were developed as of May 23, 2025, based upon current market conditions. Hence, they are subject to significant changes in the event that project implementation is delayed. Notwithstanding the cost estimates from this report being used in the applicable Interconnection Agreement for the related project, FirstEnergy reserves the right to re-evaluate and provide a more accurate cost estimate during the implementation phase of the project.

3.3 Schedule Assumptions:

- FirstEnergy's ability to support this schedule also depends on the feasibility of taking the required outages to support construction. Outages that are determined to negatively impact system reliability or cause congestion may be delayed or denied, at any time, even if they are submitted on time based on the Outage Submittal Rules in section 4.2.1 of PJM Manual 03. This includes, but is not limited to, outages requested between the months of June and September, as well as January and March, which typically get denied due to summer and winter peak conditions. Therefore, the construction schedule will be adjusted as needed to accommodate any outage restrictions that have been identified by FirstEnergy or the Transmission Provider.

4. LAND REQUIREMENTS

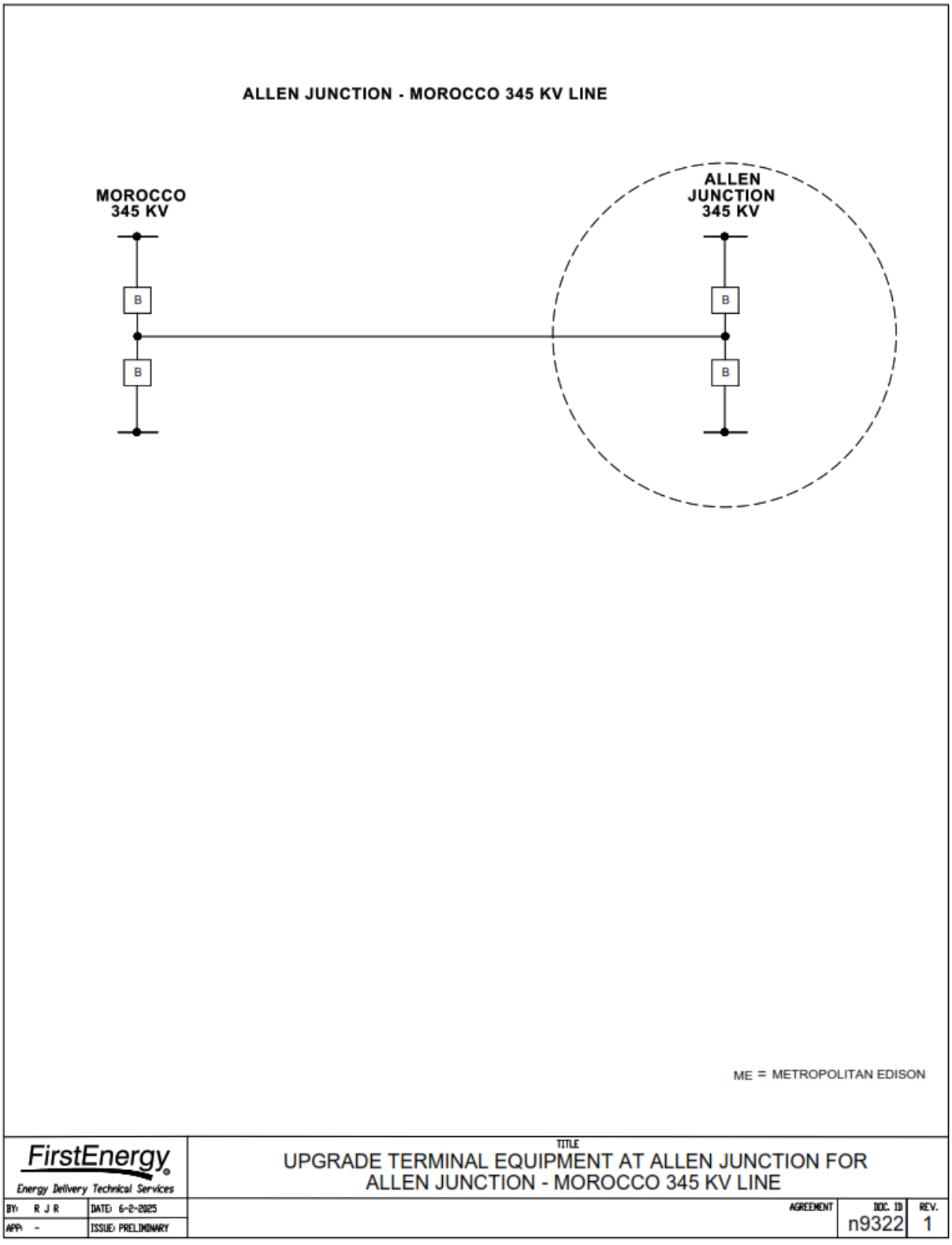
Not Applicable.

5. ENVIRONMENTAL AND PERMITING

Not Applicable.

C. APPENDICES

ATTACHMENT #1: SINGLE LINE DIAGRAM



ATTACHMENT #2: PROTECTION REQUIREMENTS

Project Scope:

Upgrade terminal equipment at Allen Junction for Allen Junction - Morocco 345 kV Line. Replace (4) disconnect switches - Replace (4) breaker leads - Reconductor (2) TL Drops - Replace (1) meter.

Allen Junction Substation:

Short circuit: Local short circuit currents will be approximately 22 kA.

Allen Junction-Morocco 345 kV line (B34531, B34532):

- Replace M650 line meter (assumed to be SEL-735)
- Review 345 kV line relay settings on terminal exit.