



Pole Loading Analysis Guidelines for Austin Energy Infrastructure

This document is intended to provide guidelines for third party vendors who perform pole loading analysis (PLA) on Austin Energy (AE) Infrastructure. Please direct all questions to PAOperations@austinenergy.com.

All PLAs submitted to AE shall be prepared at the direction of a Texas licensed professional engineer(s), sealed by a Texas licensed professional engineer, and must conform to an AE approved process and methodology. If Licensee wishes to submit its proposed process and methodology to AE, AE agrees to review such process and methodology for prior acceptance. AE shall accept and rely on the documentation submitted by Licensee, but AE reserves the right to perform, or have a firm retained by AE perform, its own engineering and field evaluation. All costs for such engineering and field evaluations shall be paid by Licensee.

Austin Energy poles requiring a PLA:

- Poles that have 5 or more existing communication attachments
- Junction poles- A pole that accommodates primary voltage service running in more than two directions. These conductors can be a single primary tap off the main line or another primary circuit crossing the main line
- AE reserves the right to require a PLA on any pole

The pole attribute data described below shall be submitted with poles requiring a PLA. This data shall be used by Licensee to support the creation of a PLA in pole attachment identification software acceptable to Austin Energy. Licensee shall deliver a comprehensive Permitted Software PLA Report in PDF format which shall contain a summary of the detailed PLA results for each pole surveyed including safety factors for pole loading, guy wires, vertical loads, and all attachment heights. Prior to providing such a report, a sample report shall be provided to Austin Energy by Licensee along with Licensee's request for Austin Energy's acceptance of the report format. A single PLA Report in the approved format shall be generated for each pole by Licensee and submitted to Austin Energy. The PLA data shall include but not be limited to:

- Permitted Software: O-Calc Pro
- Distribution poles shall follow these guidelines:
 - Pole ID
 - A digital photo of each pole must be obtained.
 - Pole brand information (Length, Class & Species)
 - Span lengths and associated line angle for all attachments
 - Complete electrical and communication equipment data including type, size and orientation.
 - Austin Energy's current requirements for Loading District and Construction Grades are as follows:
 - Electric distribution poles:
 - NESC Grade C construction
 - NESC Medium wind and ice requirement
 - Electric distribution poles that are located at highway or railroad crossings:
 - NESC Grade B construction
 - NESC Medium wind and ice requirement
 - Complete pole attachment attributes which include:

- Type, Owner, height, clearance, and size of all electrical and communication attachments on the pole
- Electrical wire tensions will be set per NESC Section 261.H.1.b at 35% of the rated breaking strength of the conductor (Maximum Design Tension)
- If Licensee would like to use a lower tension, a survey showing sag must be conducted and a determination of the maximum design tension using Southwire's Sagten program must be made. Austin Energy may deny this method without cause.
- Total usage of the pole based on the available ground line moment capacity of the pole shall be less than 90%. Any pole exceeding 90% capacity shall be replaced with a calculated pole size which will pass the 90% usage capacity requirement
- Setting Depth
 - Wood Pole Depth shall be based on the tables shown in [DCS Section 1118](#).
 - Steel pole depth is set according to tables in [DCS Section 1118](#)
 - Soil conditions must be considered when determining setting depth, especially East of IH-35 due to expansive clay issues.
 - Complete guying information including guy wire diameter, anchor location and orientation. Austin Energy uses 7/16" EHS and 3/8" EHS
 - guy wires. Please contact Austin Energy if a different size is found.
- Height Measurements:
 - Licensee shall submit collected digital images that are calibrated with a Permitted Software in order to extract attachment heights, or a survey showing the ground clearance at mid-span for all conductors, and pole height and attachment heights relative to the ground line. These attachment heights are applied in the pole model (described below) to their respective attachments. Overall pole height is also measured, and setting depth adjusted to exactly model field conditions.
- Steel poles are a special case, the contractor shall use the charts in [Section 1118 of the Distribution Construction Standards Manual](#) to determine the percentage of usage of the pole based on

the ground line moment. A usage value above 90% must be reviewed by Austin Energy to determine if a new class of pole is required.

- Distribution poles shall be run at either NESC Grade B for major road crossings or at NESC Grade C for all other poles.

- Code: NESC
 - NESC Rule 250B
 - Grade B
 - Ice thickness 0.25"
 - Wind Speed (mph) 39.53
 - Wind Pressure (psf) 4
 - Transverse Wind LF 2.50
 - Wire Tension LF 1.65
 - Vertical LF 1.50

- Code: NESC
 - NESC Rule 250B
 - Grade C
 - Ice thickness 0.25"
 - Wind Speed (mph) 39.53
 - Wind Pressure (psf) 4
 - Transverse Wind LF 1.75
 - Wire Tension LF 1.3
 - Vertical LF 1.90

Transmission poles shall have four analysis ran using the following inputs including the information and data from our [Distribution Construction Standards Section 1118](#) :

- Code: NESC
NESC Rule: Rule 250B
Const. Grade: B
Load District: Heavy
Ice Thickness (in): 0.5
Wind Speed (mph): 39.53
Wind Pressure (psf): 4
Transverse Wind LF: 2.5
Wire Tension LF: 1.65
Vertical LF: 1.5
- Code: NESC
NESC Rule: Rule 250B
Const. Grade: B
Load District: Light
Ice Thickness (in): 0
Wind Speed (mph): 59.29
Wind Pressure (psf): 9
Transverse Wind LF: 2.5
Wire Tension LF: 1.65
Vertical LF: 1.5

- Code: NESC
NESC Rule: Rule 250C
Const. Grade: B
Load District: Extreme Wind
Ice Thickness (in): 0
Wind Speed (mph): 90
Wind Pressure (psf): 20.736
Transverse Wind LF: 1
Wire Tension LF: 1
Vertical LF: 1

- Code: NESC
NESC Rule: Rule 250D
Const. Grade: B
Load District: Concurrent Ice & Wind
Ice Thickness (in): 0.5
Wind Speed (mph): 30
Wind Pressure (psf): 2.304
Transverse Wind LF: 1
Wire Tension LF: 1
Vertical LF: 1