Appendix C: Consistent Structure Grading Categories for PAC Presentations

VERSION 1
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Document History

This document will be reviewed and updated (if necessary) on a periodic basis. Revisions to the document will be posted on Transmission Owner Asset Management section of the ISO-NE website.[1]

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[1] https://www.iso-ne.com/system-planning/transmission-planning/transmission-owner-asset-management

Consistent Structure Grading Categories for PAC Presentations

The Transmission Owners (TOs) periodically inspect their facilities, including their overhead transmission lines. The types of inspections commonly used for overhead transmission facilities are described in more detail in Section 1.1.1 of this Guide and include visual aerial inspections (typically performed via helicopter or drone), climbing inspections, and groundline inspections. All types of inspections include an evaluation of the physical condition of transmission line structures and their components, such as foundations, poles, crossarms, insulators, guy wires, and attachment hardware.

Based on the results of these inspections, a TO will assign a grade to each structure on a transmission line. If inspection of a particular structure identifies primarily issues which can be repaired in the field, the TO will usually perform the necessary repairs and update the grade of the structure. Structures receiving grades indicating moderate to severe deterioration which cannot be repaired will be replaced by the TOs with the approach to replacement determined based on the level of deterioration. Table 1, below, summarizes the individual structure grading systems used by each TO.

For the purposes of presentations to the Planning Advisory Committee (PAC), the TOs have developed four consistent categories of structure grades and actions taken upon identification of structures with grades that fall into each category. Table 1 shows how these categories align with the individual structure grading system used by each TO. The TOs will use the consistent structure grading categories when presenting asset condition projects that involve transmission line structure replacements to the PAC.

Overhead transmission lines also include other components such as conductors and shield wires. These components are evaluated during some types of inspections (primarily aerial inspections). Their condition may also be evaluated by monitoring failure rates and by performing physical testing of samples removed from service. The TOs do not currently use grading systems for these components.

Table 1 – Structure Grading Categories for PAC Presentations

Category	Recommended Action[2]	Eversource	New England Power Company (d/b/a National Grid)		Avangrid	VELCO	Versant Power	Rhode Island Energy
	Structure type:	Wood & Steel	Wood	Steel	Wood & Steel	Wood[3]	Wood & Steel	Wood & Steel
A	No replacement required due to deterioration	A	4	1, 2	Good[4]	A	N/A[2]	3
B	Consider replacement in conjunction with other structure replacements	B	3	3, 4	Fair[5]	B	L (Low)[6]	2
C	Initiate planned structure replacement project **or** Replace as part of upcoming structure replacement project	C	2	5	Reject (Priority 3 or Priority 2)[7]	C	M (Medium), H (High)[8]	1
D	Replace immediately (emergency replacement)[9]	D	1	6	Danger (Priority 1)	D	C	N/A[10]

[2] Structure replacements may also be required due to other issues, such as structure loading and clearances
[3] VELCO's steel structures are all relatively new and do not have asset grades at this time.
[4] Structures with no identified issues are not assigned a grade by Versant Power
[5] Avangrid increases inspection frequency for structures rated Fair
[6] Versant Power seeks to replace structures rated L (Low Priority) within 3 years
[7] Avangrid classifies structures graded "Reject" into Priority 3 and Priority 2. Avangrid seeks to replace Priority 3 structures within 3 years and Priority 2 structures within 1 year
[8] Versant Power seeks to replace structures rated M (Medium Priority) within 1 year and structures rated H (High Priority) within 6 months
[9] Emergency replacements of individual structures typically cost less than $5 million and would not require a PAC presentation
[10] Emergency replacement structures are not assigned a grade by RIE but are still replaced immediately, similar to other TOs