

Distribution Transformer Working Group: Guide to understanding and using the enclosed information

The focus of this effort was to support the following short term goals in addition to providing information for longer term strategies with input from a selection of Utilities and Transformer manufacturers. Each goal is discussed with some background on why this effort was investigated and some insight on how to interpret the information provided.

GOAL #1: Distribution Transformer Taxonomy Table

In the initial discussions, it was clear that there was need to ensure that everyone in the group was using the same terminology and understanding for different critical components and operations within the this space. A general taxonomy table was derived from IEEE standards, RUS documents, and design specifications to align the baseline terminology and impact to ratings, design, and manufacturing. This table is considered a reference for the transformer attributes to be considered for the remainder of the discussions and provide a clear communication among varying levels of technical understanding.

GOAL#2: Core Transformer Configuration Matrix

This effort began with an investigation into different attributes related to kVA sizing, critical design specifications and accessories. The input provides insight to Utilities and Manufacturers on what the broader peer groups are doing in their individual systems or regions. This could be used to identify transformer sizes or features that can be consolidated or phased out due to increased standardization or electrification in the system. The impact of reducing variations could increase the economies of scale for increased manufacturing efficiency while providing the potential for more streamlined inventory to support areas of mutual assistance. This information led to the creation of specific configurations to identify the minimal components to safely operate as compared to a standard baseline and ultimately the utility customized configuration. The impact of these configurations was reviewed by manufacturers to identify the impact to the manufacturing process and opportunities for increased manufacturing capacity. This document was designed to be used as a starting point by utilities for new transformers to understand each configuration needs and the impact to manufacturing time and complexity that result in tradeoffs of ideal functionality and manufacturing throughput. Using this information for new designs could help decrease the manufacturing time per unit and avoid some critical long lead time components resulting in an increase of overall transformer manufacturing capacity.

GOAL #3: Interchangeability Matrix

Many supply chain influences have been identified throughout this process of defining critical features and configurations which result in significant impacts to the overall lead time. This may be due to sole source vendors, production limitations by preferred vendors, incompatible specifications, or many other factors. Not all utilities and even manufacturers may understand the breadth of the supply chain landscape to understand all the potential vendors available for these critical products. This table provides the opportunity to leverage inputs from multiple transformer manufactures and utilities to identify potential alternatives for compatible or completely interchangeable critical components. This is not an outline of preferred manufacturers, but rather an insight from the broader peer groups as to manufacturing options. This document is intended to be used as a tool to provide more informed and efficient discussions between manufacturers and utilities to support consistent supply of critical components and faster acceptance for identified interchangeable components. This matrix could also be used by manufacturers to proactively work with utilities to approve alternate vendors identified in the matrix to optimize the lead times based on component availability. Utilities could further use these references to leverage a larger knowledge database for critical interchangeability of areas such as fuses to identify alternatives and proper coordination.